JVC

SERVICE MANUAL

MODEL

KD-A8 A/B/C/E/J/U

STEREO CASSETTE DECK

No. 4181
April 1979

Contents

Specifications

Type : Component stereo cassette deck
Power requirement : AC 120V, 60Hz (KD-A8 C/J)
AC 240/220/120V, 50/60Hz (KD-A8 A/B/E)
AC 240/220/120/100V, 50/60Hz (KD-A8 U)
Power consumption : 40W
Motors : FG type DC servo motor (for Capstan)
DC motor (for Reel)
Heads : 2-SA (Sen-Alloy) heads
X-cut head for recording and playback
2-Gap head for erasing
Frequency response : (-20 VU recording)
Metal tape : *1
15 – 18,000Hz
25 – 17,000Hz (±3dB)
SA/Chrome tape : *2
15 – 18,000Hz
25 – 17,000Hz (±3dB)
SF/Normal tape : *3
15 – 17,000Hz
25 – 16,000Hz (±3dB)
(0 VU recording)
Metal tape :
25 – 12,500Hz (±3dB)
SA/Chrome tape :
25 – 8,000Hz (±3dB)
Frequency response when using the computer B.E.S.T. tuning system
(-20 VU recording)
Metal tape :
40 – 12,500Hz (±1dB)
SA/Chrome tape :
40 – 12,500Hz (±1dB)
SF/Normal tape :
40 – 12,500Hz (±1dB)
Those values are almost the same for all types of tapes when the computer B.E.S.T. tuning system is used.

Note: *1 ..... SCOTCH METAFINE or Equivalent
*2 ..... TDK SA or Equivalent
*3 ..... MAXELL UD or Equivalent

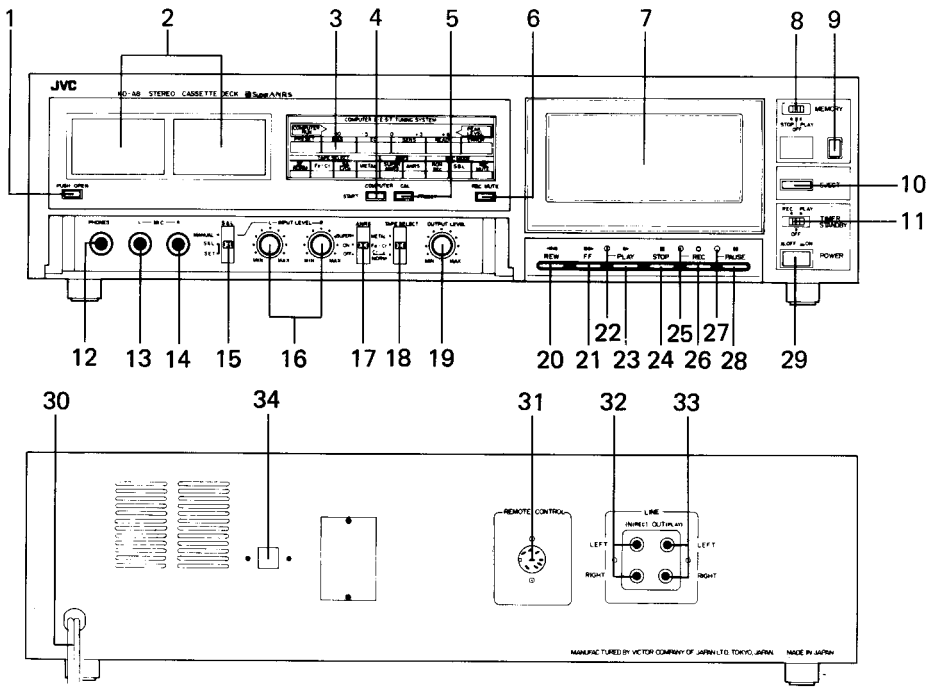
S/N ratio : ANRS-OFF .... 60dB (weighted, 1kHz, 3% THD, Metal tape)
ANRS-ON ..... improved by 5dB at 1kHz and 10dB at 5kHz and over
Effects of Super ANRS:
(Normal tape) Improvement of S/N ratio .....
the same as with ANRS
Improvement of frequency response....
0VU recording; 6dB at 10kHz
+5VU recording; 12dB at 10kHz
Improvement of distortion .....
0VU recording; 3% or less at 10kHz
+5VU recording; 3% or less at 10kHz
Channel separation : 35dB (1kHz)
Crosstalk : 65dB (1kHz)
Wow and flutter : 0.035% (WRMS), 0.12% (DIN 45 500)
Harmonic distortion : K3; 0.4%, THD; 1.0%
(metal tape, 1kHz)
Fast forward time : 85 sec. or less (with C-60 cassette)
Rewind time : 85 sec. or less (with C-60 cassette)
Bias frequency : 85kHz
Input jacks : Mic jack x 2,
Max. sensitivity; 0.2mV (-72dBs)
Matching impedance; 600Ω–10kΩ
LINE IN jack x 2,
Min. input level; 78mV (-20dBs)
Input impedance; 100kΩ
Output jacks : LINE OUT jack x 2,
Output level; 0 – 300mV.
Output impedance; 3.7kΩ
PHONES jack x 1
Output level; 0 – 0.5mW
Matching impedance; 8Ω–1kΩ
Semiconductors : 53 ICs, 91 transistors, 4 FETs,
97 diodes (11 Zener Diodes), 23 LEDs,
1 Hall element
Dimensions : 17-3/4" (450 mm) W
4-7/8" (124 mm) H
15-3/8" (390 mm) D
(with feet, buttons, switches)
Weight : 24.2 lbs (11 kg)

Design and specifications subject to change without notice.

Features

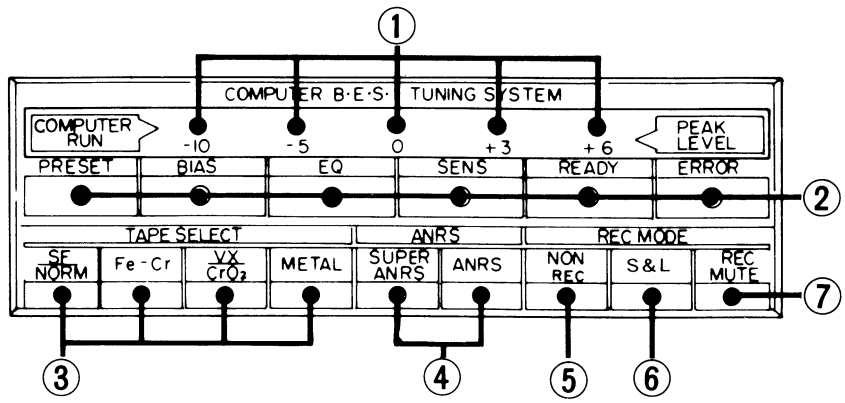
1. Fully compatible with the New Metal Tape format.
2. Computer B.E.S.T. Tuning System for the automatic adjustment of Bias, Equalization and Sensitivity of Tape.
3. Computer B.E.S.T. Tuning System for the automatic adjustment of the recording when you are not at home.
4. Search & Lock mechanism to Search for the maximum source signal level and Lock the recording level to the optimum setting.
5. X-cut SA (SEN-ALLOY) record/play head for improved frequency response, minimizing the contour effect.
6. 2-Gap SA (SEN-ALLOY) erase head for perfect compatibility with Metal Tape.
7. 2-Motors, ID (Independent Drive) mechanism makes the wow and flutter a low 0.035% (WRMS).
8. Full-logic control operation.
9. Super ANRS improves S/N ratio and linearity at high frequencies.
10. 5 LED multi-point peak level indicators.
11. REC MUTE switch, MEMORY COUNTER with memory Stop-Play switch and Automatic input selector (Mic – Line)
12. Remote control terminal (for the optional remote control unit) – R-30E
13. Bias and Equalization selected with one 3 position tape select switch.
14. Indicators are grouped so as to be easy to check.
15. Compact design, only 4-7/8" (124 mm) high, with a control panel door.

Controls and Connections



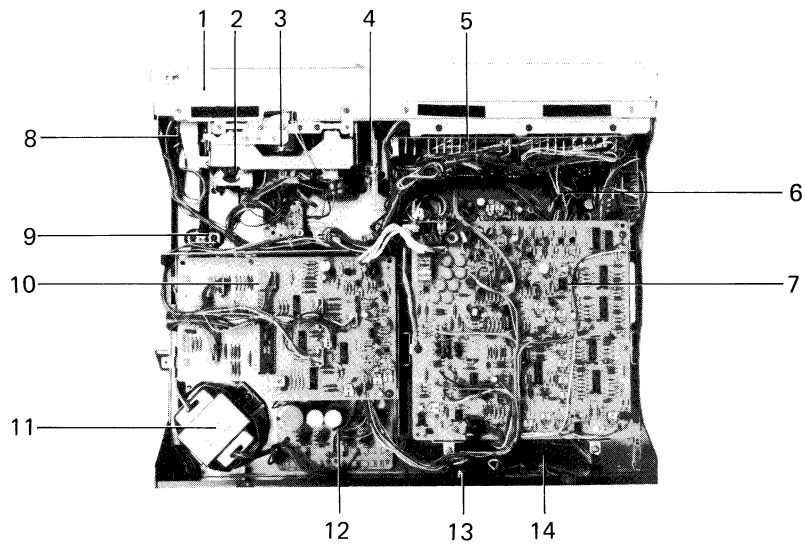
1. PUSH OPEN switch
2. Level meters
3. Indicators (see page 4)
4. COMPUTER START switch
5. PRESET switch
6. REC MUTE switch
7. Cassette holder
8. MEMORY switch
9. Counter reset button
10. EJECT button
11. TIMER STANDBY switch
12. Headphone jack [PHONES]
13. Left channel Microphone jack [MIC-L]
14. Right channel Microphone jack [MIC-R]
15. Search and Lock switch
16. INPUT LEVEL controls (L = left channel, R = right channel)
17. ANRS switch
18. TAPE SELECT switch
19. OUTPUT LEVEL control
20. Rewind button [◀◀ REW]
21. Fast forward button [▶▶ FF]
22. Playback indicator (green)
23. Playback button [▶ PLAY]
24. Stop button [■ STOP]
25. Recording indicator (red)
26. Recording button [○ REC]
27. Pause indicator (green)
28. Pause button [▮▮ PAUSE]
29. POWER switch
30. Power cord
31. REMOTE CONTROL socket
32. LINE IN (REC) terminals
33. LINE OUT (PLAY) terminals
34. Voltage select switch (KD-A8 A/B/E/U)

Indicators



1. COMPUTER RUN/PEAK LEVEL indicators (red)
2. B.E.S.T. tuning indicators
   - PRESET (green)
   - BIAS (green)
   - EQ – equalizer (green)
   - SENS – sensitivity (green)
   - READY (green)
   - ERROR (non automatic detection – red)
3. TAPE SELECT indicators
   - SF/NORM tape
   - Fe-Cr (Ferric chromium) tape
   - SA/CrO2 tape
   - METAL tape
4. ANRS indicators
   - SUPER ANRS
   - ANRS
5. NON REC (non recording) indicator (green)
   This indicator light that the safety tab on the cassette has been removed.
6. S & L (search and lock) indicator (green)
7. REC MUTE (recording muting) indicator (red)

Main Parts Location



1. Front panel ass'y
2. D.C. solenoid ass'y (for play)
3. Reel motor
4. Gear-oiled damper brake
5. I.C. control P.W. board
6. Main amp. P.W. board
7. Analog/digital (A/D) Converter
8. Hall element P.W. board
9. Power switch
10. Computer P.W. board
11. Power transformer
12. Mecha control P.W. board
13. 8 pins DIN socket (for remote)
14. Pin jacks ass'y

* Mechanical components are the same as model KD-A6. See the service manual of KD-A6 A/B/C/E/J/U (No. 4176 – page 4)

Description on New Technology

Computer B.E.S.T. Tuning System

Outline

The Computer B.E.S.T. (Bias, Equalization and Sensitivity of Tape) Tuning System using a microcomputer, one result of advancing semiconductor technology, has been developed for the automatic adjustment of bias, equalization and sensitivity. It also makes the reduction of the number of parts used in a cassette deck possible while assuring a reliable performance.

1. Bias

Fig. 1 shows the relation between the bias current and the distortion of 1kHz and 6.3kHz signals, the greater the bias current, the bigger the drop in output level. Especially steep attenuation of the 6.3kHz signal can be seen. On the other hand, the third harmonic distortion increases as bias current is reduced.

This illustrats that bias current is an important factor determining frequency response and distortion, and setting the optimum bias current depending on the tape being used becomes necessary.

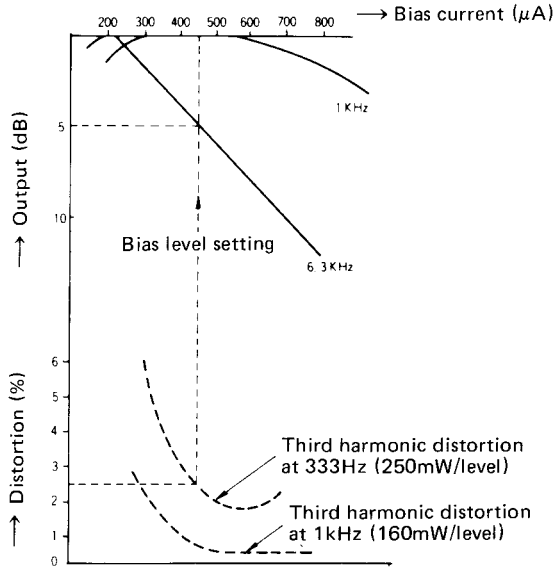


Fig. 1

2. Equalization

Fig. 2 shows the measurements for tapes made under the same condition; the equalization should be adjusted to obtain a flat characteristic from the tape with the bias current determined according to the maximum output level characteristic at high frequencies as well as distortion. Conventionally, equalization has been set by a listening test, which requires a great deal of experience to achieve accurate tuning.

With the Computer B.E.S.T. Tuning System, the optimum equalization level is set automatically.

3. Sensitivity

If the sensitivity is not the optimum value for tape, levels in recording and playback will not be the same. Any difference between the input level and output level results in different frequency response curves in record and playback through a noise reduction circuit such as ANRS or Super ANRS. With this Computer B.E.S.T. Tuning System, the level difference between recording and playback is kept within 0.5dB.

Features

1. Automatic discrimination between normal and chrome tape (including SA tape).
2. Automatic setting of the optimum bias level depending on the tape used.
3. Automatic setting of the high frequency characteristic at 10kHz, which varies greatly, to ±1dB.
4. Automatic setting of the tape sensitivity, which is important when a noise reduction circuit such as ANRS is being used, so that the difference between recording & playback levels is within ±1dB.
5. An error indication is given when the characteristics of the tape used are out of the range the Computer B.E.S.T. Tuning System can handle. Normal recording is possible in the PRESETmode.

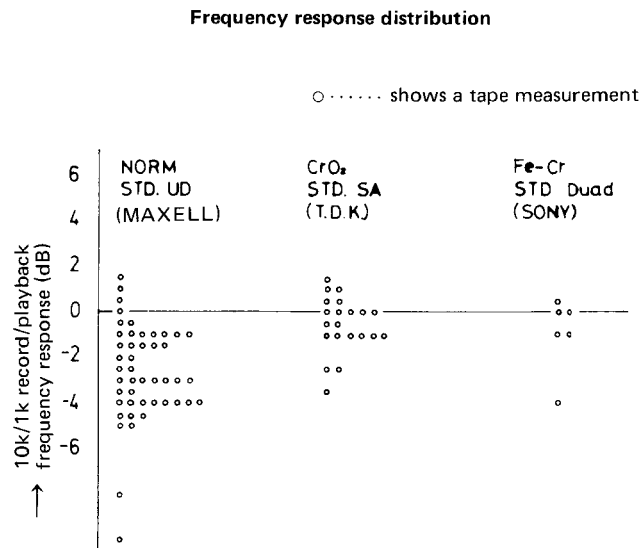


Fig. 2

Operation timing chart

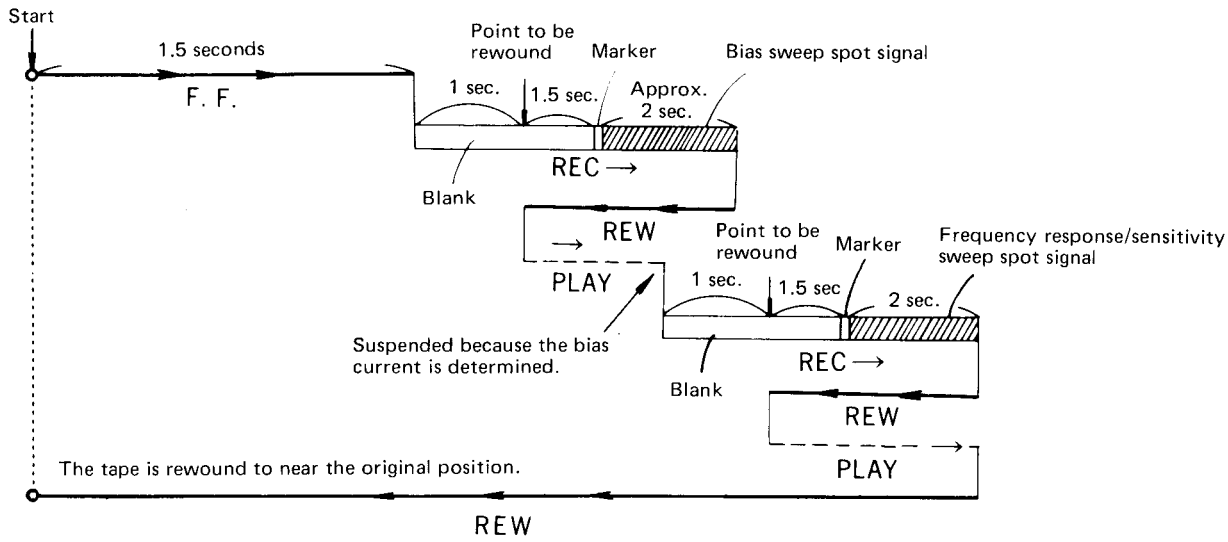


Fig. 3

Operation

Refer to the operation timing chart (Fig. 3) while reading this.

1. Press the start button
   The 5 LED indicators at the top of the indicator panel light from the left to right while the Computer B.E.S.T. Tuning System is operating.
2. Fast forward for 1.5 seconds
   This is to skip the leader tape portion.
3. Recording mode
   Recording is performed with no signal for 2.5 seconds. This is done to stabilize the tape transport mechanism as well as to obtain a good electrical performance.
   After this, the marker signal and 1kHz reference signal are recorded. Then the 6.3kHz signal is recorded. While this is being recorded, the bias current is varied from +60% to -90% of the preset level in 32 steps, with each step lasting 60 msec. (The preset level is the bias current level, equalization level and tape sensitivity determined for the standard tape of the type the selectors are set for.) (Fig. 4)
4. Rewind
   The tape is rewound to the point where the non-signal recording was performed for 1.5 seconds at the beginning of the recording.
5. Playback
   This is to compare the playback level of the 1kHz reference signal with that of 6.3kHz signal (as described in the step 3) to find the bias level where they are the same. Since the bias current has been varied from the low to high in the recording mode, the playback level of the 6.3kHz signal tends to increase.
6. After obtaining the optimum bias in step 5, the green LED (BIAS) lights to show the bias level is set. Then, recording is performed with no signal for 2.5 seconds. Following this, the marker and a 1kHz reference signal are recorded. Then, the 10kHz signal is recorded with the equalization level of the right channel varied from low to high in 16 steps, with each step lasting 60 msec. At the same time, a 1kHz signal is recorded on the left channel. Then, the 10kHz signal is recorded with the equalization level varied from low to high. To adjust tape sensitivity a 1kHz signal is recorded with the recording level varied from low to high in 16 steps, with each step lasting 60 msec. This recording level results in a variation of ±5dB. (Fig. 5)

Bias level setting

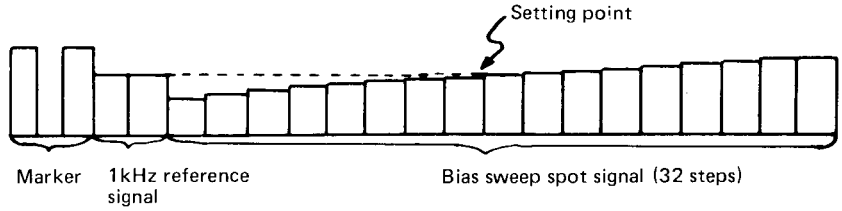


Fig. 4

Setting frequency response and sensitivity

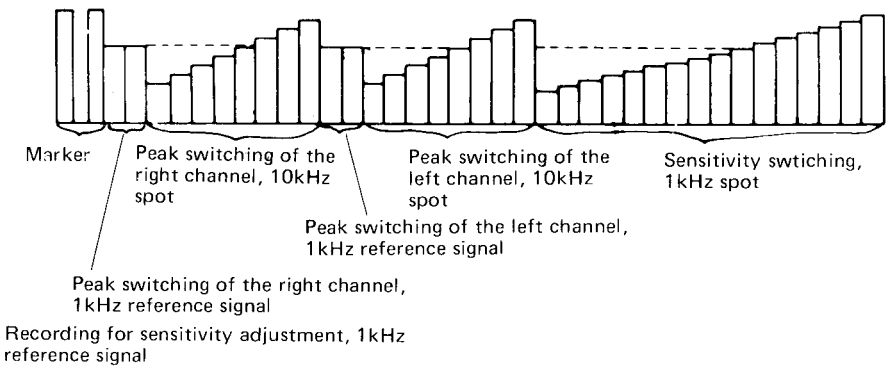


Fig. 5

7. As shown in Fig. 2, the tape is rewound to the point where non-signal recording was performed for 1.5 seconds at the beginning of the recording as described in step 6.
8. Playback
   The tape is played back to compare the playback output level of the 1kHz reference signal with that of 10kHz signal on the right channel. Since the equalization level has been varied from low to high in the recording mode, a point where the playback level is the same is obtained during this. After storing this point in memory, the same operation is performed for the left channel. For tape sensitivity adjustment, the right channel level of the 1kHz reference signal which has been stored in memory in the recording mode in step 6 is compared with the tape sensitivity adjusting signal which is varied in 16 steps to obtain a common point.
   The green LED (EQ) lights when equalization adjustment for the left and right channels is completed.
   The green LED (SENS) lights when sensitivity adjustment is completed.
9. After tuning for the equalization and sensitivity is completed, the tape is rewound to near the original position described in step 1.
   Then, the LED indicators of BIAS, EQ and SENS go out and the READY LED lights.
   A flow chart of the operation is shown in Fig. 6.
   The microcomputer is automatically reset when the power is turned on and all outputs are stopped.

Service switch

This switch is employed to adjust the cassette deck.
The microcomputer has 7 adjustment programs handling test signal generation, bias current variation, equalization variation, sensitivity variation as well as checking the operation of the electronic mechanism. With the service switch off, checking is performed whether the Computer B.E.S.T. Tuning System has operated or not. When the Tuning System has operated, the automatic setting level is output. If the ERROR indication is given prior to or during the Tuning System's operation, the preset level is output. Thus, ordinary recording is possible when automatic setting is impossible.
Automatic setting of bias, equalization and sensitivity is performed after the START switch is pressed.

When automatic setting becomes impossible during the tuning operation, re-tuning is performed after returning to the bias setting mode. If the ERROR indication is given again, the red LED flickers and the preset level is output. Because the tape is rewound to its original position regardless of the ERROR indication, the tape can be used fully. It requires approx. 25 seconds to complete the automatic setting operation.

Flow chart of computer B.E.S.T. tuning process

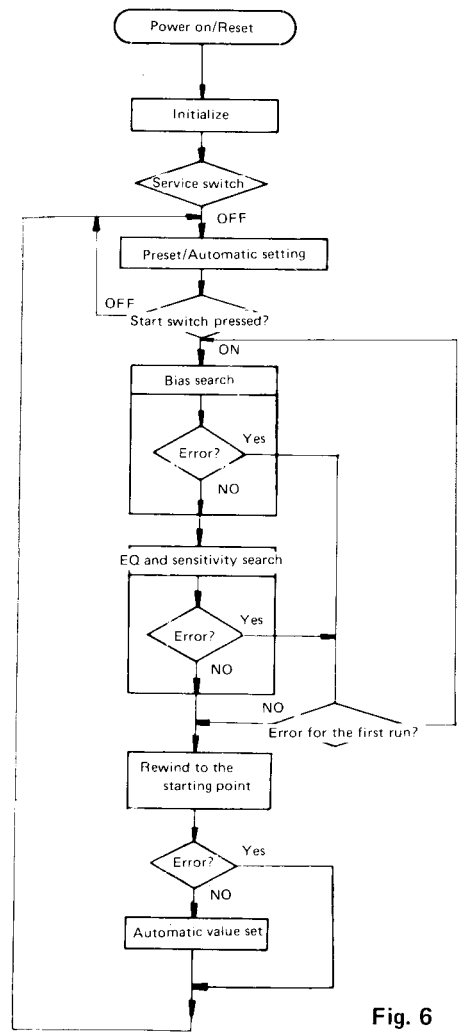


Fig. 6

Operation of the circuit

1. Bias current setting

Fig. 7 shows the circuit which varies the bias current. When the specified step pulses are applied from the microcomputer to the counter IC, the output is present at b1 – b5. Transistors Tr1 – Tr5 in each rated current circuit allow the resistance of R1 – R5 to become twice or 3 times larger, permitting the current to vary in steps. With this varing current, the LEDs are turned on and the variation of the amount of light causes the resistance of the CdS cells to vary, thus varying the bias current. For example, if 3 count pulses are applied, an output of 1100 becomes available at b1 – b5, allowing a current proportional to the output to flow to the LEDs.

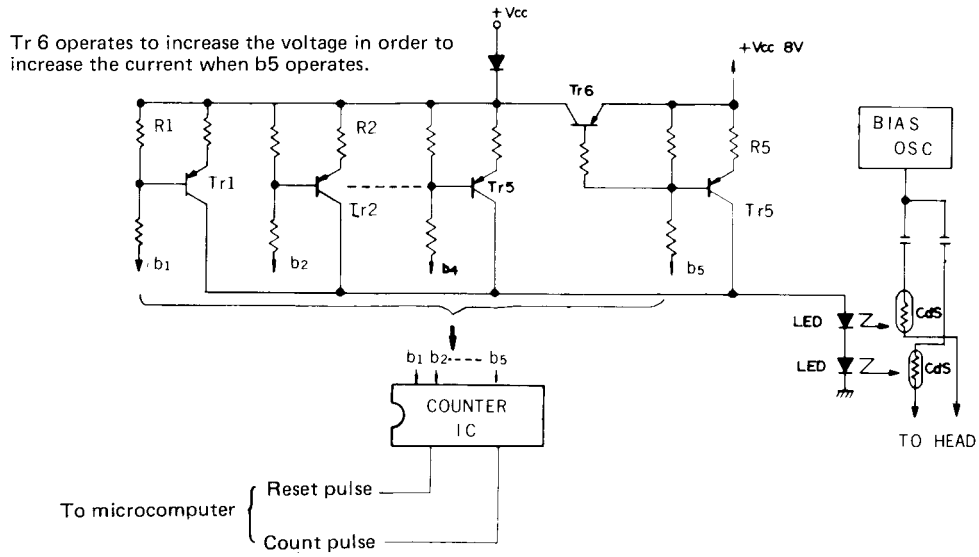


Fig. 7

2. Equalization setting and sensitivity setting

Fig. 8 shows part of recording amplifier circuit. The input signal is attenuated by either resistor R0 or one of R1 – R16 and applied to the transistor. The signal varying sensitivity is given from the microcomputer, connecting one of resistors R1 – R16 to ground, thus, the attenuation rate is determined. The variation signal is applied in binary 4-bit and is converted into decimal. For the variation switch, an IC with a built-in CMOS analog switch is used in order to prevent audio distortion. By varying the signal in this way, a recording level variation of ±5dB is obtained.

A peaking L.C. resonance circuit formed in parallel with the emitter resistance of the transistor in the recording amplifier circuit, boosts high frequencies in recording amplification. For a normal tape, the 10kHz level becomes 10dB higher than that at 1kHz. Then, the amount of compensation for high requencies is varied by switching the capacitor of the peaking circuit. A 3-bit binary signal is applied from the microcomputer and is converted into a 8-step signal switching the CMOS analog switch, thus the level is varied within the range +7~-3dB.

3. Signal level detection circuit (A/D converter)

As described above, the detection of the signal level plays an important role in the Tuning System. In addition, the level values have to be stored in the memory of the microcomputer. For this reason, an A/D converter is used in combination with the microcomputer to make operation highly reliable.

Fig. 9 is the timing chart of the A/D converter. Each test signal step has a width of 60 msec.

However, integration is performed in level detection, after a 10 msec interval in order to prevent transient distortion in switching operation from being measured. Discharge is performed after 40 msec. The signal level is computed by measuring the discharge time.

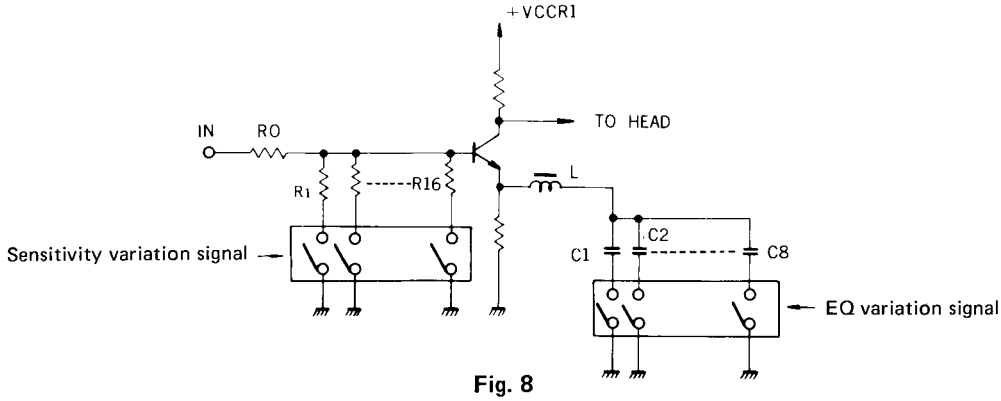


Fig. 8

The input signal is detected after being amplified by OP AMP1 and is fed to the integration circuit consisting of resistor R0 and capacitor C.
The changeover switch S1 is the CMOS analog switch. Since the integration time constant is fixed, the integrated output of OP AMP2 is proportional to the input signal.
After 40 msec, the analog switch is switched to allow discharging which is determined with the time constant of resistor R1 and capacitor C.

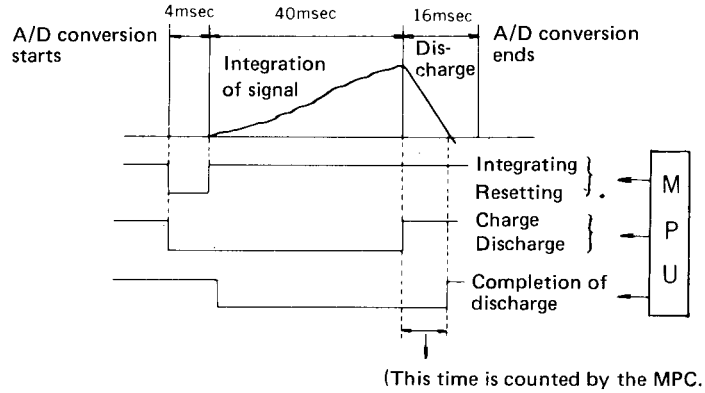


Fig. 9

As shown in Fig. 9, the output voltage of the OP AMP2 falls, OP AMP3 detects when its discharge becomes lower than 0V, and the output of the OP AMP3 is inverted from -5 to +5V. The microcomputer counts the discharging time from beginning to end to measure the signal level. During the 4 msec prior to the integration, capacitor C discharges through resistor r so that it is not overcharged. The integration, discharge, reset, discharge end timing signals are used in communication with the microcomputer, so level measurement with high reliability is possible with the minimum member of parts.

4. Marker signal detection

In each recording mode in tuning for bias, equalization, and sensitivity, a marker signal is recorded at the beginning as shown in Fig. 4 and 5.
Two marker signals of 1kHz, -5dB having a duration of 40 msec are recorded twice with a blank period of 40 msec between them. In the Computer B.E.S.T. Tuning System, the tape is rewound by counting pulses generated from the tape counter for tuning palyback. However, it is not sufficiently accurate to stop the tape at the 60 msec signal. To do this, the marker signal must be detected in the playback mode.
As shown in Fig. 10, integration is performed with resistor Rm and capacitor Cm. The signal level is compared with -0.3V by OP AMP4 and the output is inverted from +5 to -5V. The marker detection signal is transmitted to the microcomputer. The microcomputer detects the test signal by detecting non-signal playback for 60 msec with a signal after 40 msec, thus enabling accurate position detection by eliminating malfunctions due to external noise.

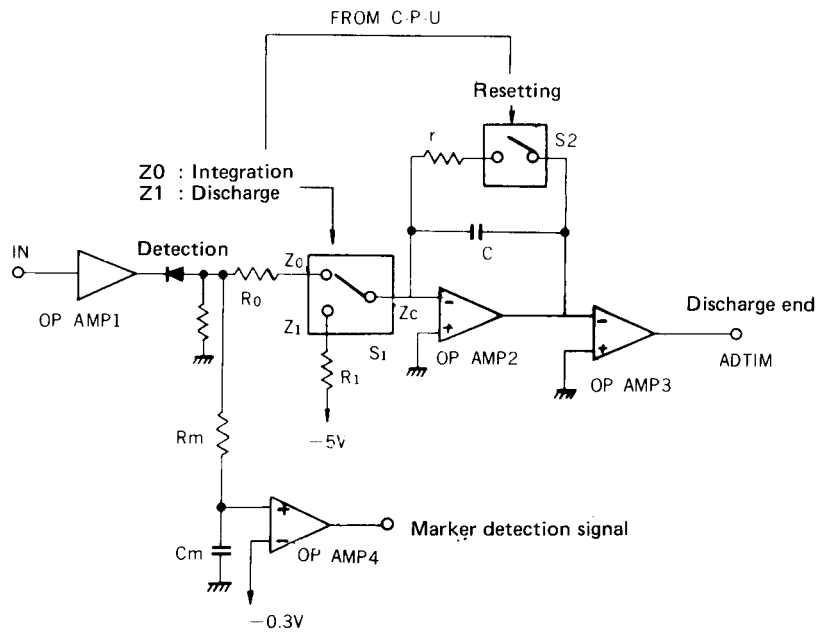


Fig. 10

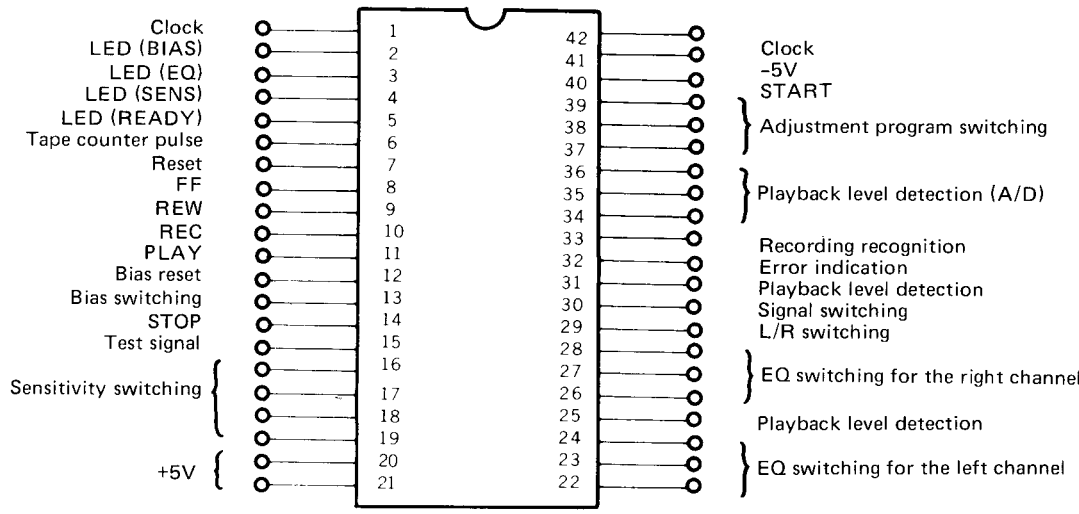


Fig. 11

5. Microcomputer

The microcomputer controls the tuning performance of the Computer B.E.S.T. Tuning System. An LSI IC with 42 pins contains a microcomputer. Fig. 11 shows the pin configuration of the LSI IC. Approximately 2000 program steps are stored in the LSI IC. A normal command is processed in 10 msec. It also controls the timing of each step with a built-in timer. A P channel MOS FET is used for processing and the output is open-drain pull-down type. The clock circuit uses an LC resonance circuit assuring stable performance.

In addition, pulses from the tape counter can be counted with interrupts because of the interrupt function.

Features of the KD-A8

The KD-A8 has the following features in addition to the Computer B.E.S.T. Tuning System.

1. Compatible with the New Metal Tape format

Numerous developments have been achieved to improve the performance of cassette decks which employ lower tape speed and narrower track width than open-reel decks. Advances in magnetic tape materials are outstanding among these improvements.

The New Metal Tape is a high-performance tape using pure iron as the main components of its magnetic material coated on the polyester base. It makes high density recording possible, thus greatly improving the MOL, frequency response and dynamic range at high frequencies. To use this tape, a record/play and erase heads having a high maximum flux density are indispensable.

For the record/play head, the X-cut SA head has been further improved from the SA head to offer improved characteristics at low frequencies. The KD-A8 incorporates a 2-Gap SA erase head: SEN-ALLOY chips with a high maximum flux density are bonded at high temerature onto the ferrite core to form the portion which comes into contact with the tape, thus eliminating Metal Tape residual noise.

2. S & L mechanism (optimum recording level automatic setting mechanism)

Recording level setting is an important factor for a quality recording.

The S & L mechanism Searches for the maximum source signal level and Locks the recording level to the optimum setting.

3. 2-motor, full logic control, ID mechanism

The newly developed 2-motor, full logic control, ID mechanism assures a wow and flutter of 0.035 (WRMS) which is capable of achieving the superior characteristics of Metal Tape at high frequencies. Proper back tension of the tape is applied by the mechanism to improve tape/head contact. Click noise is eliminated in the pause mode by the real time mechanism.

4. Timer standby facility

Using an audio timer, recording can be automatically started after the Computer B.E.S.T. Tuning System's operation time of approx. 25 seconds. This provides the convenience of unattended recording.

Maintenance

To get long, trouble-free service, maintenance is important. Do not forget cleaning and demagnetizing.

Cleaning

After long use, the heads and tape part — capstan, pinch roller, etc. — will become dirty with dust or magnetic particles. Dirty heads cause imperfect erasing or high frequency drop-off. A dirty capstan and pinch roller will cause unstable tape speed, leading to increased wow and flutter. Always keep them clean by following the procedure below.

1. Heads

1) Push Eject button to open the cassette holder.
2) Use the head cleaning stick-provided to wipe the surface where the tape comes into contact with the head. (It is effective to moisten the cotton with alcohol.)

2. Pinch roller and capstan

Do the same method as heads.

3. Cabinet

When the cabinet becomes dirty, wipe it with a soft cloth soaked with a neutral cleaning solution of a polishing cloth.

* Do not use thinner or benzine.

Demagnetizing

The heads are made from a material resistant to magnetization, but after long use they may become magnetized. A magnet brought into their vicinity can magnetize the heads, causing excess noise. If noise seems to have increased, demagnetize the heads with a head demagnetizer through the following procedure.

1. Turn the POWER switch OFF.
2. Wrap the tip of the demagnetizer with vinyl tape or soft cloth so as not to damage the head surface. Switch on the demagnetizer and bring it close to the head.
3. Move the tip of the demagnetizer slowly first to the left and right, then up and down in front of the head. Gradually move it away from the head and switch it off at a distance of more than 30 cm (12").
4. The erase head need not be demagnetized. The capstan shaft and tape guide should be demagnetized in the same way as the record/playback head.

* Do not bring a magnetized metallic object (a screwdriver, for example) near the head as this will increase noise.

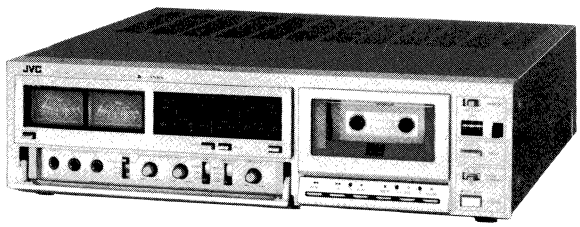
Oiling

Apply one or two drops of machine oil to the pinch roller shaft once or twice a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

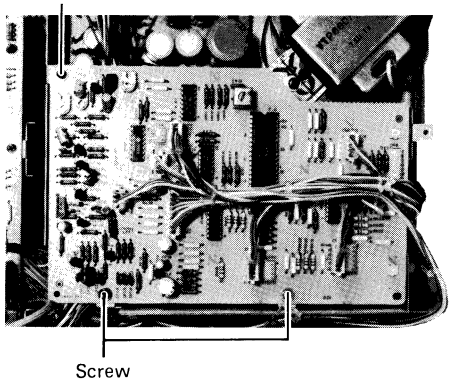
Removal of the Main Parts

Observe care in handing the parts since the parts are small in size and the distance between them are short due to a deck design aimed mainly at compactness and high performance.

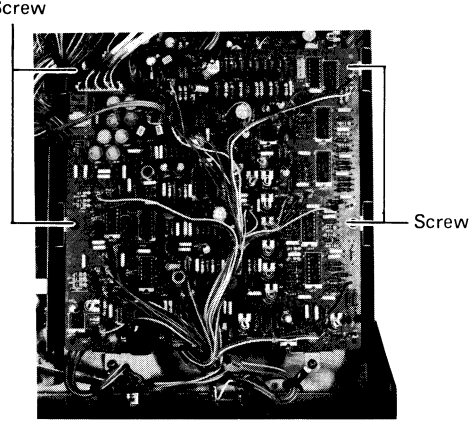
Top Cover
Remove 6 screws fastening the top cover.
(When removing the top cover, hold its rear to upper side.)



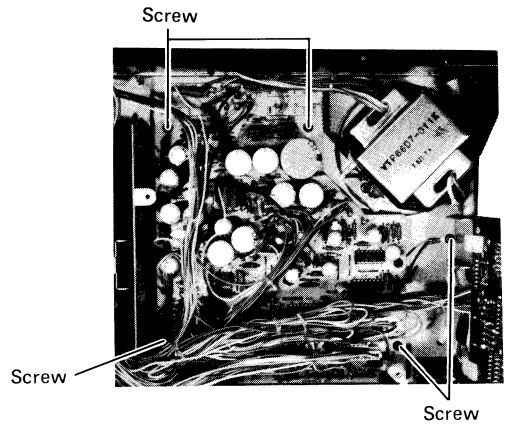
Computer P.W. Board Ass'y
Remove 3 screws and open the its P.W. board for electrical checking. (need not remove 2 P.W.B. holders.)



Analogic digital (A/D) P.W. Board Ass'y
Remove 4 screws and open its P.W. board for electrical checking. (need not remove 2 P.W.B. holders)

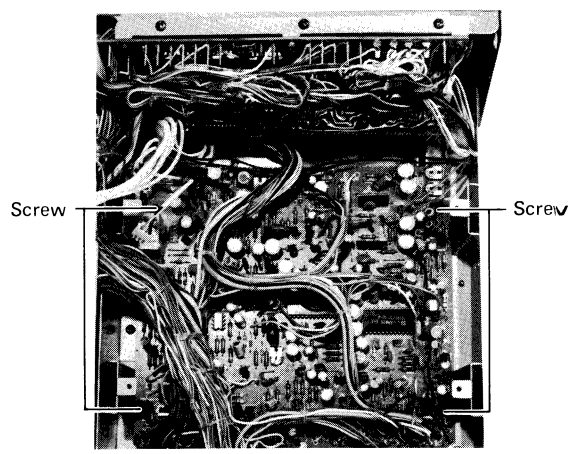


Mecha. control P.W. Board Ass'y
1. Open the computer P.W. board ass'y.
2. Remove 5 screws fastening P.W. board ass'y

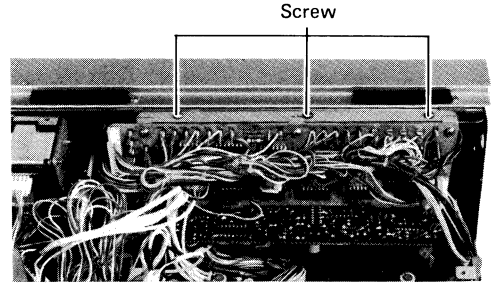


Main amp P.W. Board Ass'y
1. Remove the analogic digital P.W. board ass'y.
2. Remove 4 screws fastening the main amp. P.W. board ass'y.

(When checking the printed pattern of mecha control or amp P.W. board ass'y, remove 8 screws fastening the bottom cover only.)

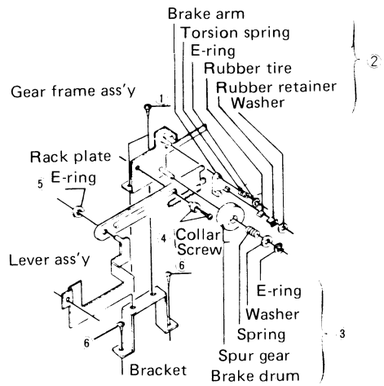


IC Control P.W. Board Ass'y
1. Remove 3 screws fastening the IC P.W. board ass'y.
2. Pull the lower parts of its P.W. board from the amp P.W. board to upper side.



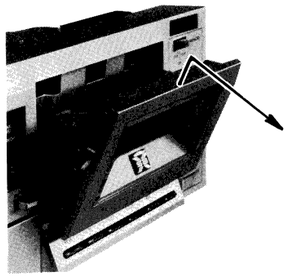
Removal of the door brake

1. Gear frame ass'y .....
   Remove 2 screws ①.
2. Brake arm .....
   Remove an E-ring and a torsion spring.
   Remove a washer, a rubber retainers and a rubber tier. } ②
3. Spur gear and brake drum .....
   Remove an E-ring, a washer and a spring ③.
4. Rack plate .....
   Remove a screw and a collar ④.
5. Lever ass'y .....
   Remove an E-ring ⑤.
6. Bracket .....
   Remove 2 screws ⑥.



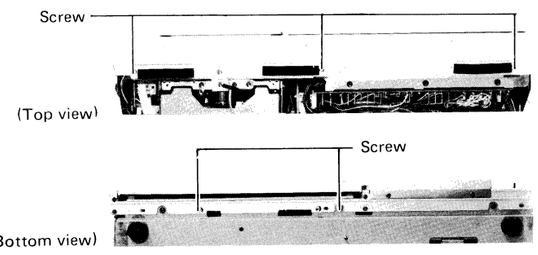
Cassette door

1. To open the cassette door, depress the eject button, and lift it up (approx 5 mm) to remove it locks.
2. Pull the cassette door forward.



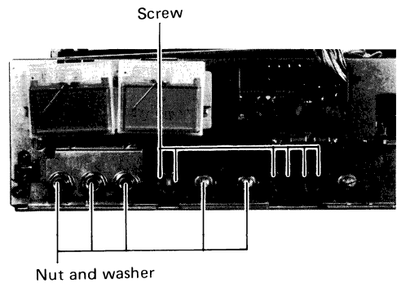
Front plate ass'y

Remove 6 screws (each 3 screws on its upper and lower parts) fastening the front plate ass'y – with control switch related parts –
When replacing REC/PB or E head, remove 2 screws fastening the control switch ass'y
(need not remove the front plate.)



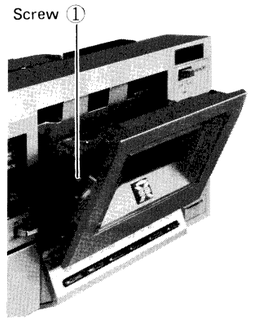
Amp. P.W. Board Ass'y (2) – Microphone jacks and headphone jack ass'y P.W. board –

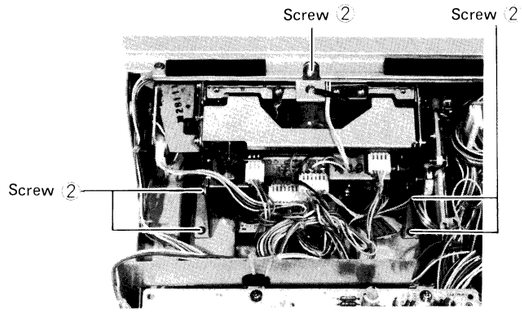
1. Remove 3 lever switch knobs (ARLL, ANRS, TAPE SELECT)
   Remove 2 input level control knobs.
2. Remove the IC control P.W. board ass'y
3. Remove nuts and washers the following parts.
   Headphone jack
   Microphone jacks (L and R)
   Input level controls (L and R)
4. Remove 6 screws fastening the lever switches (ARLL, ANRS, TAPE SELECT).



Removal of the mechanical assembly

1. Remove a screw ① fastening the lever of the door brake. (left side of cassette door)
2. Remove 5 blue screws ② fastening the mechanical bracket.
3. To remove the gear frame ass'y for gear-oiled door brake, remove 2 screws. (see removal of the door brake.)





Removal of mechanical parts

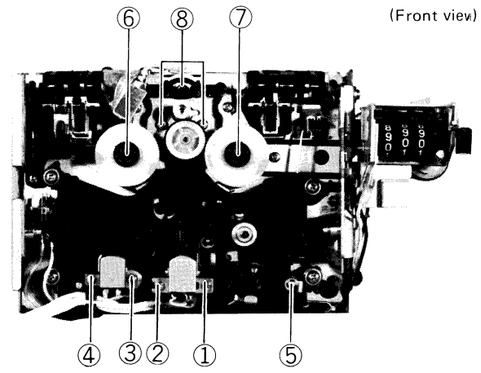
1. REC/PB head .....
   Remove a screw ①.
   Remove a screw ② for adjustment.
2. Erase head .....
   Remove a screw ③.
   Remove a screw ④ for adjustment.
3. Pinch roller arm ass'y .....
   Remove an E-ring ⑤ holding its ass'y.
   Pull it off from the shaft.
4. Supply reel disc .....
   Pull out the reel disc stopper ⑥ and pull out its disc from shaft.
5. Take-up reel disc .....
   Pull out the reel disc stopper ⑦ and remove the counter belt, pull out its disc from shaft.

Note: (1) Remove the reel disc stoppers with a piece of sheet metal inserted between the reel disc and the stopper.
(2) Be carefui not to stain the counter belt.

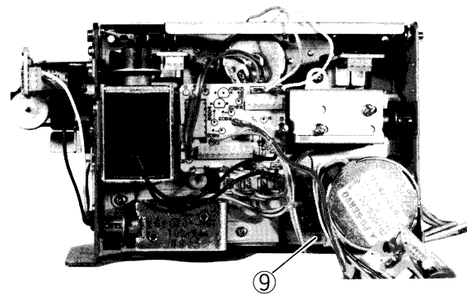
6. Reel motor .....
   Remove 3 screws ⑧ fastening the reel motor.
7. Capstan motor .....
   1) Remove a screw ⑨ fastening the rubber stopper.
   2) Remove the capstan belt from the motor pulley.
   3) To remove the motor, turn it in counter-clockwise direction and pull it out backward (with 3 cushions and 3 screws for fastening the motor).

Note: When replacing the motor, check the following points.
(1) Is the motor placed in correct position?
(Don't make the motor's position deflective.)
(2) Does the capstan belt run in the center of the motor pulley?
(3) Does the capstan belt run in the center of the flywheel?

(Front view)



(Rear view)

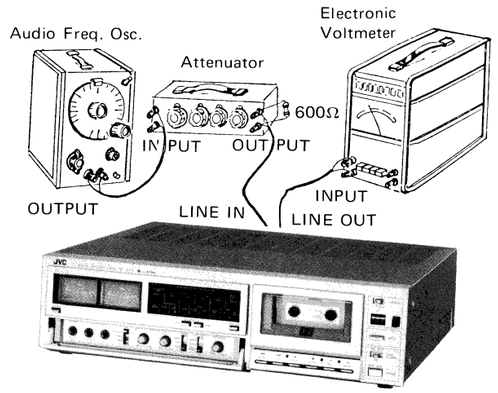


Main Adjustments

[I] Equipment and measuring instruments used for adjustment.

1. Electrical adjustment

1) Electronic voltmeter
2) Audio frequency oscillator
   (range; 50 – 20kHz and output 0dB with impedance 600Ω)
3) Attenuator
4) Computer checker (for KD-A8)
5) Standard tapes for REC/PB
   Maxell UD – SF tape
   TDK SA – SA tape
   SCOTCH METAFINE – METAL tape
   } or equivalent
6) Reference tapes for playback (JVC Test Tape)
   VTT-658 (for head azimuth adj.)
   VTT-656 (for motor speed, wow flutter adj.)
   VTT-664 (for Reference level 1kHz)
   VTT-675N (for playback frequency response)
7) Resistors
   100Ω (for measurement of the bias current)
   600Ω (for attenuator matching)



KD-A8

2. Mechanical adjustment

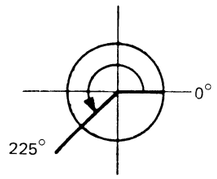
1) Gauge for checking the head position.
2) Torque gauge
3) Blank tape (C-120) for tape running checker.

[II] Adjustment and repair of the mechanism

(Troubleshooting hints)

1. Azimuth adjustment and head replacement

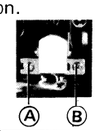
1) Remove the wires of the control switches from the wire clamps after having removed the top panel.
2) Remove the two screws positioned below the control switches (on the bottom of the set) and pull the control section forwards.
3) With the control section pulled out, azimuth adjustment and/or head replacement can be performed.
   With the JVC cassette deck series of KD-A6, KD-A5 and KD-A8 models, the adjustment or replacement can be performed more easily than with conventional cassette decks which require removal of the entire mechanical section for the adjustments and/or replacements.



2. Tape-to-head contact adjustment

1) Turn the adjusting screw for aligning the erase head until it stops. Then, turn the screw in the reverse direction by 225° (a 5/8 revolution).
2) Check the tape-to-head contact using a C-120 tape having pads.
3) Check it again with a SCOTCH METAFINE – Metal tape.
   Checking method:
   Record a 400Hz or 1kHz signal with 0VU +20dB. Erase the recording. Check if the erasing is satisfactorily performed.
4) After adjustment, apply screw bond on the adjusting screw to prevent its loosening.

(Adjust the mechanism or confirm that it is in normal operating condition prior to the adjustment of the electrical circuit.)

Item	Adjustment	Adjusting point	Standard value	Remarks
Adjusting record/playback head azimuth inclination.  Ⓐ Ⓑ	1. Connect an electronic voltmeter to the LINE OUT terminals. 2. Play back the VTT-658 test tape. 3. Adjust the head angle with the screw Ⓐ until the reading of the electronic voltmeter becomes maximum for both channels. 4. After adjusting, set the screw with screw bond.	Screw Ⓐ	Maximum	1. If the head is worn, disconnected or exceedingly magnetized so as not to provide the necessary characteristics, replace it with a new one. After replacement, the head position adjustment as well as the playback level adjustment, the bias current adjustment and the recording level adjustment are all necessary. 2. If the output difference between the left and right channels exceeds 3 – 4dB, the head is defective. Replace it with a new one.
Adjusting erase head height  Ⓒ Ⓓ	Employ a special cassette (C-120) from which parts to the casing, where the erase head, record/playback head and capstan engage, has been cut away. Perform tape transport with the cassette tape. Adjust the screw Ⓒ until the tape runs in the center of the erase head tape guide. Normal: Tape guide, Tape Improper	Screw Ⓒ		Be sure to perform this adjustment after replacing the erase head.

Item	Adjustment	Adjusting point	Standard value	Remarks
Adjusting motor speed	Connect a speed meter to the LINE OUT terminals. Play back the VTT-656 test tape. Adjust the semi-fixed resistor on the motor P.W. board until the reading of the speed meter is 3000Hz.	Semi-fixed resistor on the motor P.W. board	3000Hz	If the speed meter functions as a wow and flutter meter, also, connect the deck to the INPUT terminals of the meter.
Checking play-back torque	Employ a torque testing cassette tape for the checking, or remove the cassette cover and use a torque gauge.		40~70 gr-cm	If the standard torque is not obtained, replace the take-up reel disc assembly.
Checking fast forward torque	Measure the torque in the fast forward mode in the same manner as in the above.		More than 70 gr-cm	If the standard torque is not obtained, perform the following. 1. Clean the capstan belt, the idler circumference, the motor pulley, the take-up reel disc circumference, the flywheel circumference, etc. 2. Replace the capstan belt or idler ass'y.
Checking rewind torque	Measure the torque in the rewind mode in the same manner as in the above.		More than 70 gr-cm	If the standard torque is not obtained, clean the capstan belt, idler, motor pulley, flywheel circumference, re-winding idler circumference, supply reel disc circumference, etc.
Adjusting the auto-stop mechanism	Perform the adjustment with the 2 screws securing the solenoid.			Check to see if the locked points of the cassette operation levers and the friction-prone points are applied with molybdenum.
Checking wow and flutter	Connect a wow and flutter meter to the LINE OUT terminals. Play back the VTT-656 test tape. Check to see if the reading of the meter is within 0.035% (WRMS).			If the reading become moving value even if conforming to the standard, a re-claim may be raised. Repais are necessary.

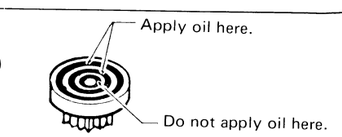
[III] Repair of wow flutter

If wow and flutter increase, check the following points. If there is defect in revolving parts, the wow and flutter generated will increase in proportion to the number of revolutions.
Play a 3000Hz test tape, and defective part can be detected from the sound.

Section	Trouble	Repair
Capstan and flywheel	Capstan shaft has excessive run-out. Flywheel turns heavily. (shaft seisure, thrust play, etc.)	Replace flywheel. Clean the capstan shaft and the groove in the flywheel. Apply oil to the metal position. Replace the capstan assembly.
Pinch roller	Rough rotation (Deformation scratches, or dust) The angular position of the pinch roller is not correct. The pinch roller pressure is not correct.	Replace pinch roller, or pinch roller spring. Clean the pinch roller or apply oil to the rotary shaft. Adjust the pinch roller so that it is parallel with the capstan shaft. Replace the pinch roller spring.
Belt	Belt has undue run-out. Belt is dirty or slippery.	Check the belt. Replace the belt.
Back tension	Back tension is irregular, or back tension is too strong.	Replace back tension spring (under supply disc).
Motor	Motor shaft has undue run-out. Motor pulley is oily and dusty.	Replace motor. Clean motor pulley.

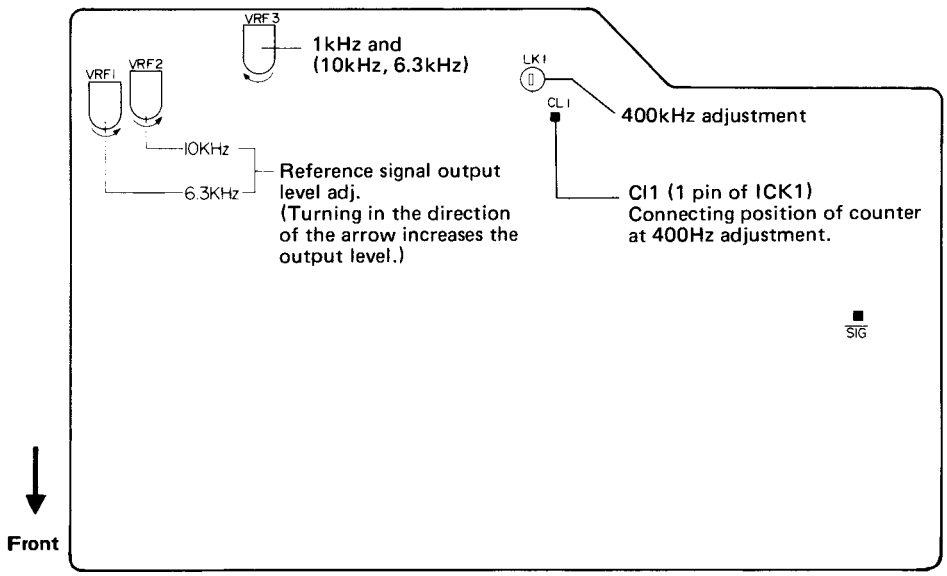
Dampling gear oil

Oil employed – Torque grease specified by JVC (KANTO KASEI GP-608)
Applying method – Apply in both concaved sections as shown in the figure.

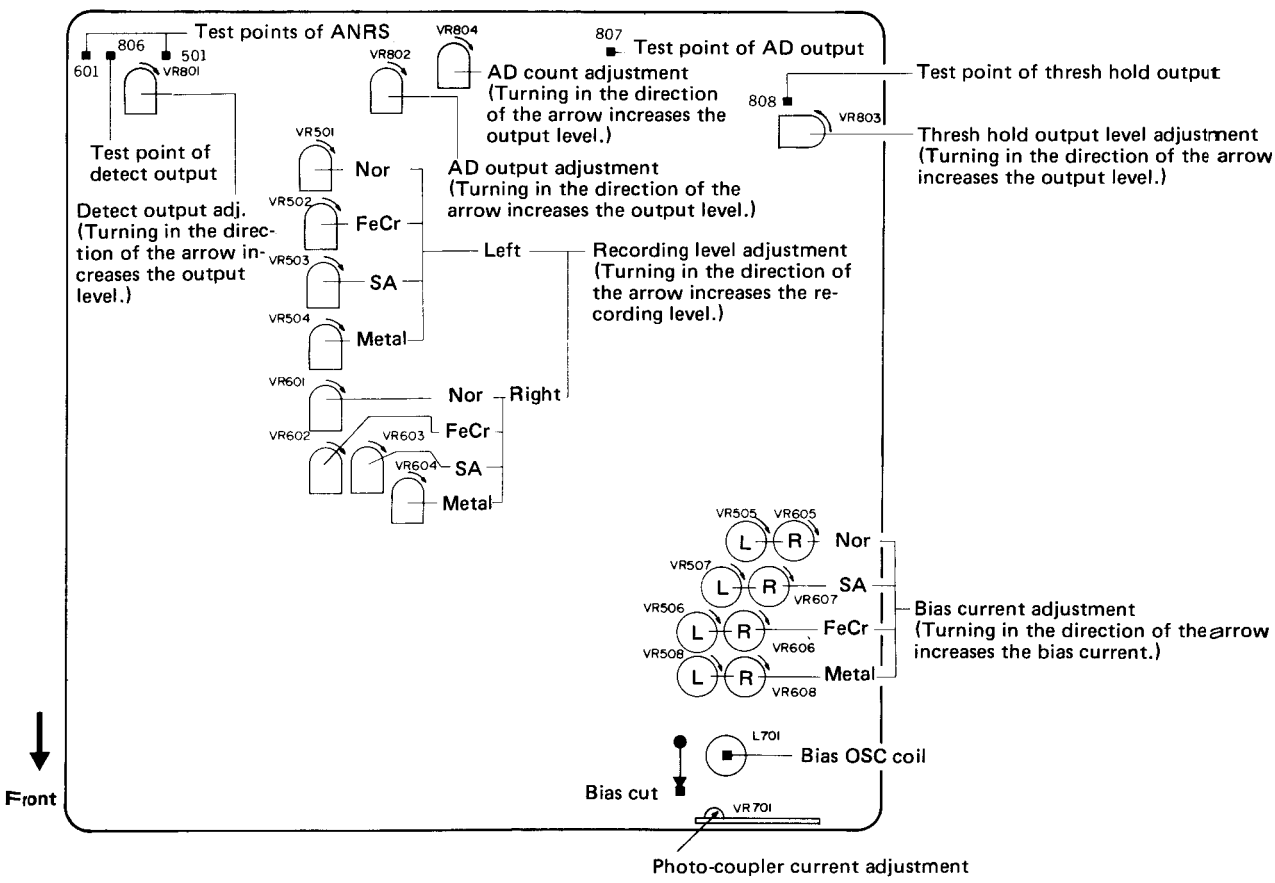


[IV] Electrical adjustment location

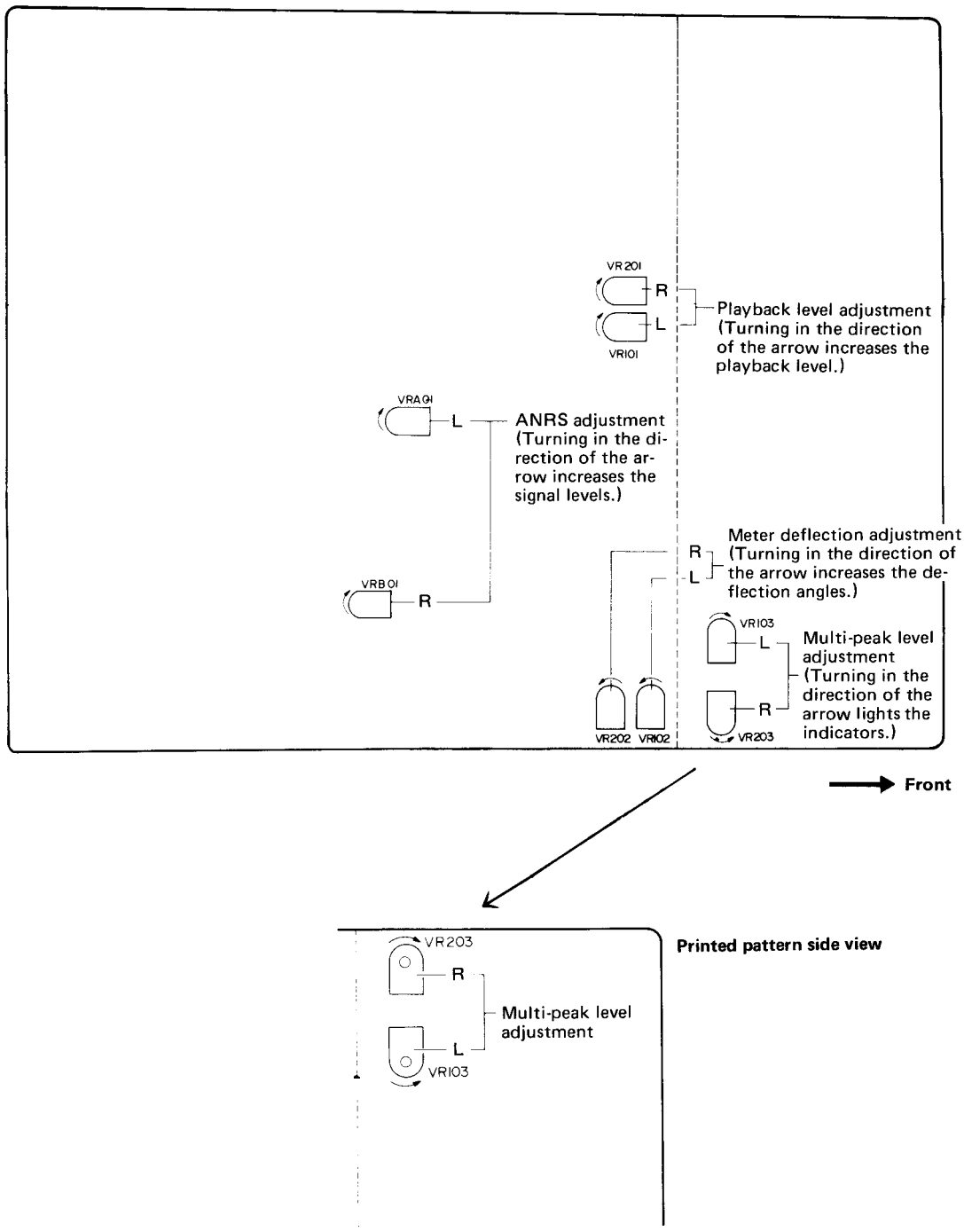
[Computer P.W. Board]



[Analog digital P.W. Board]



[Amplifier P.W. Board]

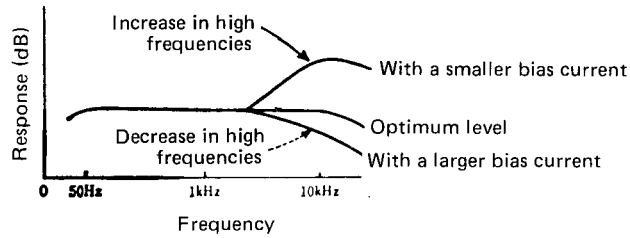
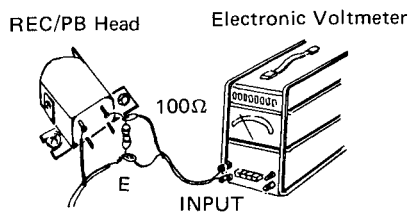


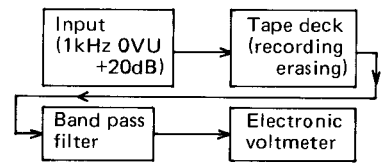
[V] Electrical circuit adjustment procedure

In all the steps (marked by an asterisk *) except the "Adjusting bias current", the adjustment is important. Be sure to perform it.

Adjustment should be performed in the sequential numerical order of the following: after adjustment the REC/PB head azimuth inclination and the E head height.

Step	Item	Adjustment	Adjusting point	Standard value	Remarks
1*	Adjusting playback level	1. Play back the VTT-664 Reference tape (1kHz) with the equalizer switch set to the NORMAL position. 2. Adjust VR101 and VR201 until the LINE OUT becomes 0.3V (about -8dB).	(Amp. P.W.B) VR101 201	0.3V (-8dB)	1. This adjustment becomes necessary when a change in playback level results (for example, due to head replacement). 2. Perform this adjustment with the ANRS switch set to OFF and with the OUTPUT level control set max.
2*	Adjusting Multi-Peak level indicator	1. Apply a 1kHz signal separately to the left and right channels of the LINE IN terminals. Adjust the recording level controls until the signal is available at -8dBs at the LINE OUT terminals. 2. Adjust semi-fixed resistors VR103 and 203 until the "1kHz 0dB" indicators extinguish with the input level reduced by 0.3dB.	(Amp. P.W.B.) VR103 203		Output level control = Maximum After this adjustment, check adjusting of VU meter sensitivity.
3*	Adjusting VU meter sensitivity	1. Set the cassette deck to its recording mode. 2. Apply a 1kHz, approx. -10dBs signal to the LINE IN terminals. 3. Adjust the recording level controls until the signal is available at -8dBs at the LINE OUT terminals. 4. Adjust VR102 and VR202 until the VU meters deflect to 0.	(Amp. P.W.B.) VR102 202	0VU	Perform the adjustment when the parts are replaced.
4	Checking record/ playback frequency response	Record 1kHz, 50Hz and 10kHz signals at an input level of 0VU -20dB. Play back the tape. Check to see that the 50Hz and 10kHz signal output deviations fall within the standard range, using the 1kHz signal output as a reference. (It is basically desirable that the 1kHz, 50Hz and 10kHz signal outputs are the same.)	(A/D P.W.B.) NOR VR505 605 Fe-Cr VR506 606 SA VR507 607 Metal VR508 608	Reference frequency: 1kHz	ANRS switch: OFF (at PRESET) Normal tape (100Hz +0.8dB ±2dB, 10kHz +9dB ±2dB) Fe-Cr tape (100Hz -1dB ±2dB, 10kHz +9dB ±2dB) Chrome tape (100Hz 0dB ±2dB, 10kHz +9dB ±2dB) Metal tape (100Hz 0dB ±2dB, 10kHz +8dB ±2dB)
5	Checking recording bias current	(Photo-coupler current adjustment) Turn VR505 and VR605 to maximum. Adjust VR701 and VR702 until the bias current become 48mV. And then, adjust the bias current of each tape.	(Photo coupler P.W.B.) VR701 702		

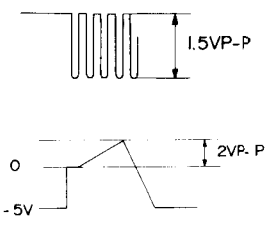
Step	Item	Adjustment	Adjusting point	Standard value	Remarks
5	Checking recording bias current	Record 1kHz, 50Hz and 10kHz signals at an input level of 0VU -20dB. Play back the tape. Adjust VR505 and VR605 (for a normal tape) VR506,606 (for a Fe-Cr tape) VR507 and VR607 (for a chrome tape) VR508,608 (for a metal tape) until the indicated deviation of the 10kHz signal output from the 1kHz signal output becomes 0.		Output deviation: 0	1. Bias current adjustment for a cassette deck should generally be performed referring to the record-playback frequency response. This is because the frequency response of a cassette deck depends more greatly upon the bias current than does that of an open reel deck. The current measuring method described below is an alternative one. 2. If the bias current is not properly adjusted, the record and playback characteristics become as shown left. 3. Should be checking the bias current, after replacing the REC/PB head.
					
		Alternative method 1. Set the deck to its recording mode. 2. Connect a 100Ω resistor to the grounding terminal (+ terminal at playback) and the lead wire of the head as shown below. 3. Measure voltage at both ends of the resistor with electronic voltmeter. 		Reference value With normal tape 30 mV With Fe-Cr tape 33mV With chrome tape 45mV With metal tape 60mV	1. In order to distinguish the - terminal of the head from its + terminal, touch the terminals with a finger while the deck is in the playback mode. The VU meters deflect when the - terminal during recording is touched. (For a record/playback head, the polarity is reversed according to whether recording or playback.) 2. Be sure to employ a shielded wire.
6	Adjusting recording level	1. Apply a 1kHz, approx. -10dB signal to the LINE IN terminals. Adjust the recording level controls until the signal is available at 0.3V (about -8dB) at the LINE OUT terminals. 2. After checking to see if the VU meters point to 0, record the signal applied to both left and right channels using a normal tape. 3. Play back the recorded part. Perform the recording signal adjustment with semi-fixed resistors so that the VU meters deflect to 0.	(A/D P.W.B) NOR VR501 601 Fe-Cr VR502 602 Chrome VR503 603 Metal VR504 604	-8dBs ± 1dB (0VU)	1. This adjustment becomes necessary when replacing the REC/PB head. Do this adjustment after step 1~5 adjustment. 2. The level difference between left and right channels for normal, Fe-Cr, chrome and metal tapes should be less than 1dB (1VU).
7	Checking record/playback signal distortion	1. Record a 1kHz, 0VU -8dBs signal to LINE IN terminals and perform recording with the VU meters pointed to 0. 2. Play back the recorded part. Check the output with a distortion meter to see if the value conforms to the standard value.		Normal tape Less than 25% Fe-Cr Chrome tape Less than 3%	Be sure to perform this adjustment following bias current and recording level adjustments.

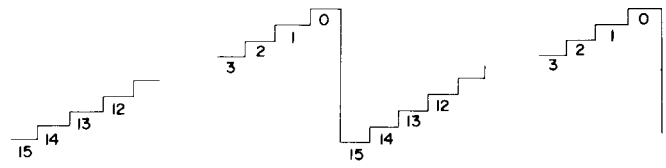
Step	Item	Adjustment	Adjusting point	Standard value	Remarks
8	Checking signal-to-noise ratio in recording/playback	1. Record a 1kHz, 0VU signal. Stop the input by disconnecting from the terminal to perform non-signal recording. 2. Play back the recorded part. Measure the 0VU recording output and the non-signal recording output for comparison using an electronic voltmeter. Check to see if the value conforms to the standard value.		Normal tape; More than 42dB	ANRS-OFF; Apply an output (-72dBs) to the MIC terminals with the recording level controls set to maximum so that the VU meters deflect to 0.
9	Checking bias current leak	1. Remove the wire tip of bias-cut on the A/D P.W. baord to stop the bias oscillator 2. Not apply a signal to the LINE IN, adjust L701 (OSC Coil) so that the LINE OUT become minimum. 3. And then, check the bias current leak less than -50dBs. (Bias Osc frequency; inner than 80~83kHz)		(A/D P.W.B) L701	
10	Checking erasing coefficient	1. Apply a 1kHz signal to the LINE IN terminals. Adjust the recording level controls until the VU meters deflect to 0. 2. Perform recording with the signal enhanced by 20dB. 3. Erase a part of the recording. 4. Measure the output difference between the erased part and non-erased part to compare with an electronic voltmeter.		More than 65dB	For the measuring, connect a band pass filter between the deck and the electronic voltmeter. 
11	Checking the Super ANRS circuit	1. Remove the wire tip of Bias-cut on the A/D P.W. board to stop the bias oscillation. 2. Fully turn the semi-fixed resistors, VR A01 and VR B01 in the opposite direction of the arrow shown on the A/D P.W. board. (If they have been roughly adjusted, there is no need to turn them.) 3. Set the deck in the recording mode with the ANRS switch set to OFF. 4. Apply a 1kHz, approx. -10dBs signal to the LINE IN terminals. Adjust the recording level controls until the outputs at the test points, 501 and 601, are -13dBs. (Be sure not to move the recording control positions during this adjustment.) The output at the LINE OUT terminals is approx. -8dBs. 5. Decrease the input signal by 40dB with an attenuator. (The output at the test points is -53dB.) 6. Adjust the VR A01 (for left channel) and the VR B01 (for right channel) with the ANRS switch set to ANRS until the outputs at the test points are -47.3dBs. (The output difference is 5.7dB with the ANRS switch set to ANRS, and then set to OFF.) 7. Check to see if the output at test points is 29.5dBs ±1dB with the input signal adjusted to 20dB, 5kHz with an attenuator. (The output difference with the ANRS switch set to ANRS and then set OFF is 3.5dB.) 8. Check to see if the test point output difference between that with the ANRS switch set to ANRS and them set to OFF is less than ±0.5dB, with the input signal adjusted to 0dB by an attenuator and a 1kHz signal frequency. 9. Turn ANRS switch in "Super" position when input 10kHz signal from LINE IN. Check test point levels so that it becomes 6 ±1dB down. 10. Play back the reference tape VTT-664 and check output level so that it less than ±1dB when ANRS switch is turned OFF from ANRS. 11. Connect the wire tip of Bias-cut to operate the bias oscillation.			

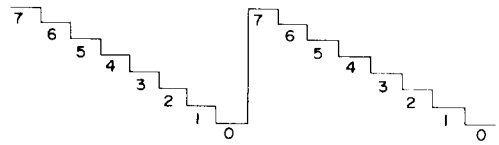
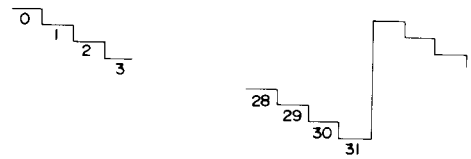
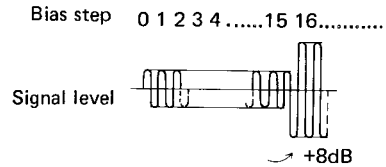
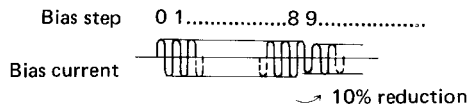
Computer Adjustment

(Use Computer Checker for KD-A8)

* Remove the SIG receptacle from the computer circuit board prior to adjustment.

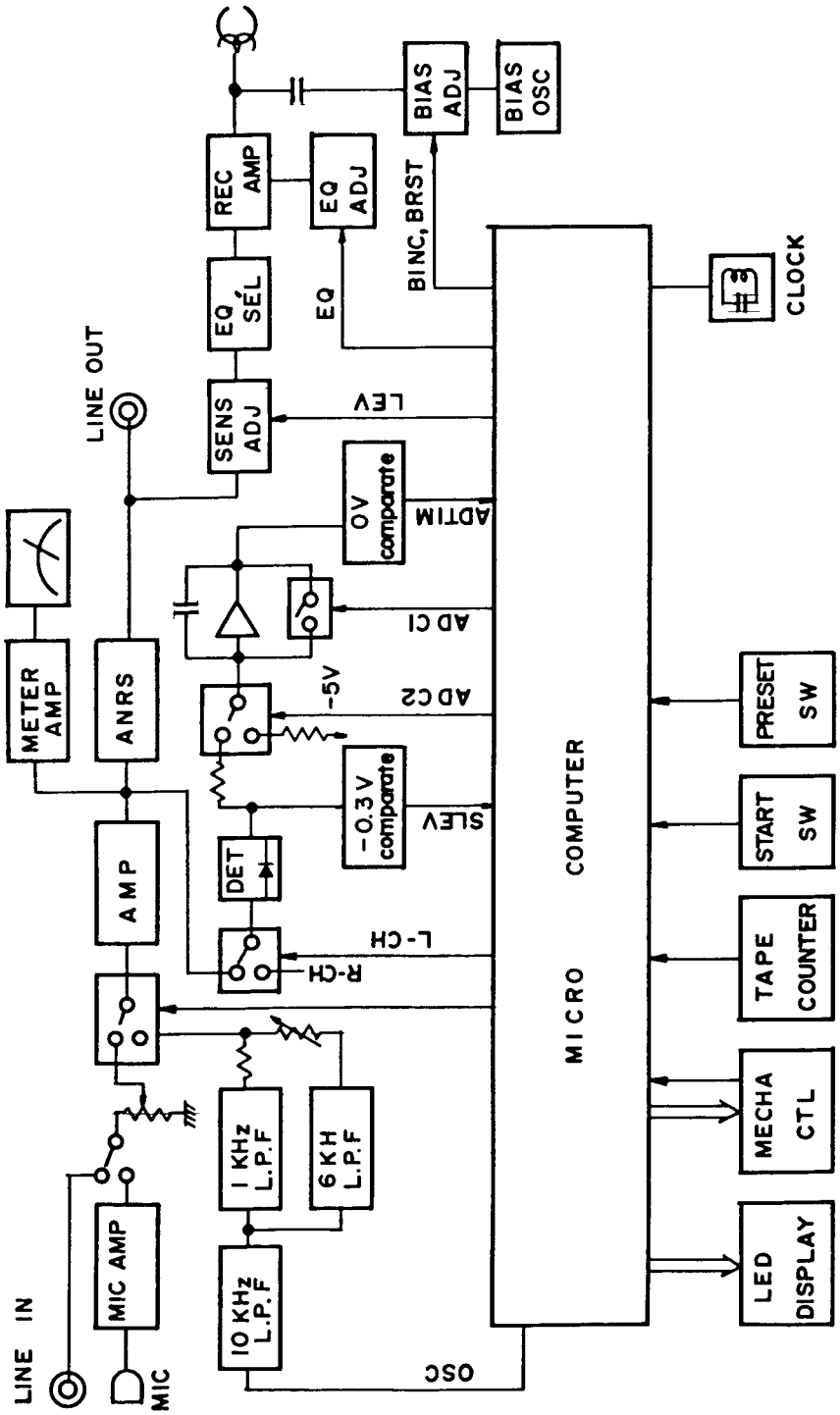
Step	Item	Adjustment	Adjusting point	Standard value	Remarks
1	Computer clock	Connect a counter to CL1 of the computer circuit and adjust the oscillation coil LK1 to obtain 400Hz output.	LK1	400kHz ±10kHz	
2	Computer oscillation	1. Set the test program switch (TEST PRO) of the computer checker to position 7. 2. Press the PRESET button of the deck with the mode switch of the computer checker set to MANUAL. Then, set the deck in the record pause mode by pressing the record, play and pause button. 3. Set the computer checker mode switch to the TEST position and press the START button of the deck to obtain the switching output of 1kHz – 6.3kHz – 10kHz.	A/D circuit board [501] [601] test point output		
		4. Adjust the VRF3 of the computer circuit board so that the input of the recording amplifier becomes -23dBs at 1kHz.	Computer circuit board VRF3	-23dBs at 1kHz	
		5. Adjust VRF1 so that the output difference becomes -0.5dB at 10kHz by switching the output between 6.3kHz and 10kHz.	VRF1	-0.5dB	
		6. Adjust VRF2 so that the output difference becomes +1dB at 6.3kHz by switching the output between 6.3kHz and 1kHz.	VRF2	+1dB	
3	Analog/ digital (A/D) converter adjust-ment	1. Set the test program switch (TEST PRO) of the computer checker to position 1. 2. Press the PRESET button of the deck with the mode switch of the computer checker set to MANUAL. Then, set the deck in the record pause mode. 3. Set the computer checker mode switch to TEST.	Analog/ digital circuit board		
		4. Adjust VR801 so that the output waveform at test point DET OUT [806] of the A/D circuit board becomes 1.5Vp-p. (maximum)	VR801	1.5Vp-p	
		5. Adjust VR802 so that the output waveform at test point AD OUT [807] of the A/D circuit board becomes 2Vp-p.	VR802	2Vp-p	
		6. Adjust VR804 so that the level detect indicator of the computer checker indicates 58.	VR804	58 count	
		7. Adjust VR803 so that the output at test point TH OUT [808] of the A/D circuit board becomes 0.3V.	VR803	0.3V	
4	Sensitivity switching	1. Set the test program switch (TEST PRO) of the computer checker to position 2. 2. Press the PRESET button of the deck with the mode switch of the computer checker set to MANUAL. Then, set the deck in the record pause mode. 3. Remove the bias +B receptacle from the A/D circuit board. Check that the record/play head signals at test pins [501] and [601] of the A/D circuit board vary as shown below (1kHz, 15 – 0 steps) with an input of 1kHz applied to the LINE IN terminal to obtain an output of -8dBs at the LINE OUT terminal. Confirm that it varies uniformly with a range of more than -5 to +5dB.			



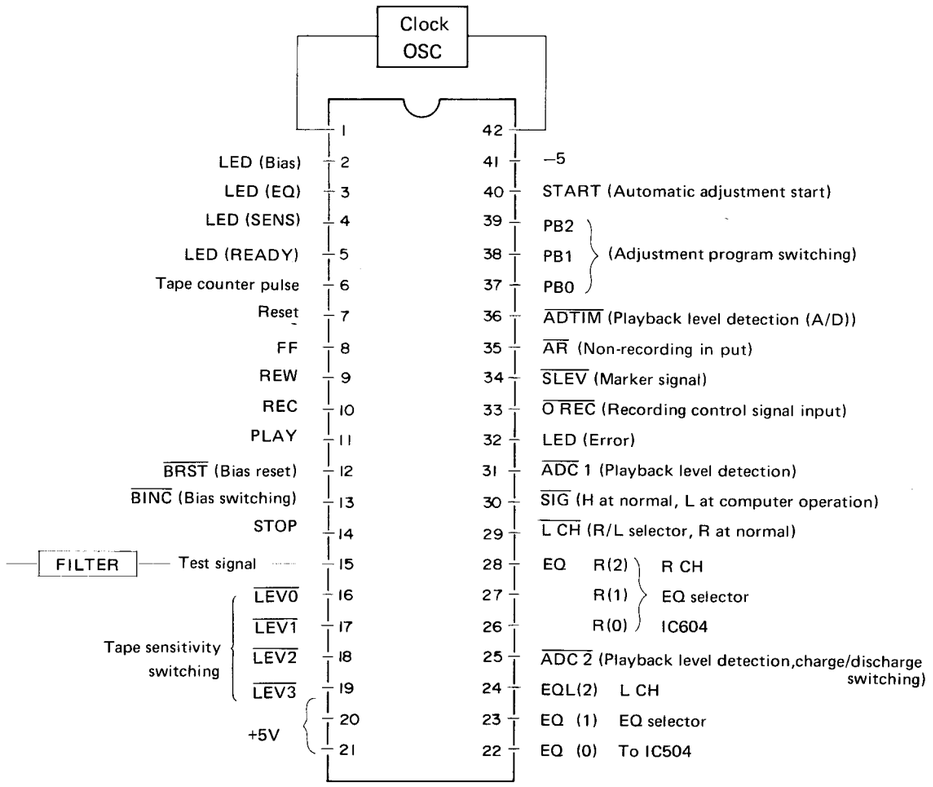
Step	Item	Adjustment
5	Equalization switching	1. Set the test program switch (TEST PRO) of the computer checker to position 3. 2. Press the PRESET button of the deck with the mode switch of the computer checker set to MANUAL. 3. Remove the bias +B receptacle from the A/D circuit board. Check that the record/play head signals vary as shown below (10kHz, 7 – 0 steps) with an input of 10kHz applied to the LINE IN terminal to obtain an output of -8dBs at the LINE OUT terminal. Confirm that it varies uniformly with a range of more than 4 – 7dB when a normal tape is used. 
6	Bias adjustment	1. Connect the bias +B receptacle of the A/D circuit board. Connect a 100Ω resistor between the white wire of the record/play head and the head terminal. Measure the bias current with the tape selector set to the $\frac{CrO_2}{NORM}$ position, the computer checker mode switch in the MANUAL position and the PRESET button of the deck pressed. 2. Disconnect the test tab of the bias control circuit board (VMW4542). Adjust the bias current with VR701 and VR702 on the photocoupler circuit board so that the level difference between the right and left channels (70μA) is maintained with a bias current of 380 – 450μA (38 - 45mV). Even if the level in the MANUAL/PRESET mode is out of this range and the level difference between the channels is within 70μA (7mV) adjust the bias current to within the range 380 – 450μA with the level difference between the right and left channel maintained. 3. Set the tape selector switch of the deck to the normal tape (NOR) position. Disconnect the test tab of the bias control circuit board. Confirm that the bias current is within the range 250 – 350μA (25 – 35mV). 4. Set the test program switch of the computer checker to position 4, and the mode switch to MANUAL. Press the PRESET switch of the deck. Set the deck in the record pause mode. Disconnect the test tab of the bias control circuit board. 5. Check that the bias current varies uniformly in a range of more than 50 – 700μA with the tape selector switch set to the $\frac{CrO_2}{NORM}$ position. Check that the bias current varies uniformly in a range of more than 50 – 500μA with the tape selector switch set to the normal tape position (NORM) (Press the STOP button, insert a normal tape and perform the operation in the step 4). (0 ~ 31 steps)  6. Checking of the METAL BYPASS circuit (VMW 4539) Set the tape selector switch to METAL. Set the test program switch of the computer checker to position 4 and the mode switch to MANUAL. Press the PRESET button of the deck and set the deck in the record pause mode. Apply a 1kHz – 19dBs (0VU – 15dB) signal to the LINE IN terminal. Check that the bias current difference between steps 0 – 15 and steps 16 – 31 is 8dB at the test pins [501], [601] of the A/D circuit board. In the same way, check that the same variation is obtained with the internal-generated signal with the computer checker mode switch set in the test position.  7. Checking the bias adjusting circuit (VMW 4542). Set the test program switch of the computer checker to position 4 and the mode switch to MANUAL. Press the PRESET button of the deck. Set the deck in the record pause mode. Ground pin 13 of the IC 703 TD3404P (or HD7404) of the bias control circuit board (VMW 4542). Check if a bias current variation of approx. 10% is obtained between bias steps 0 – 8 and steps 9 – 31. 

Block Diagram

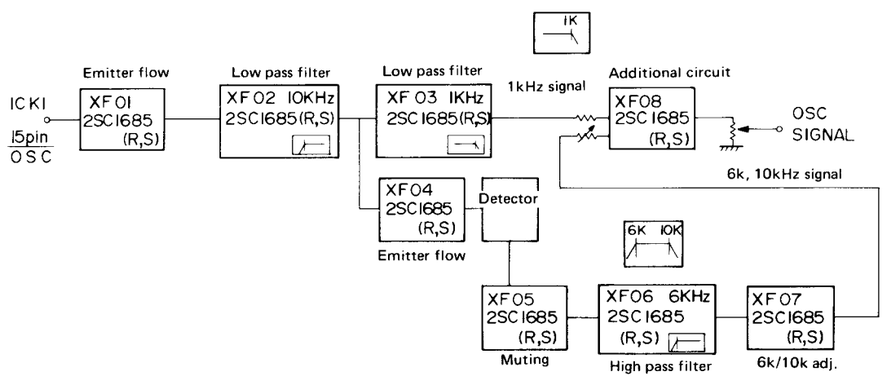
All Circuits



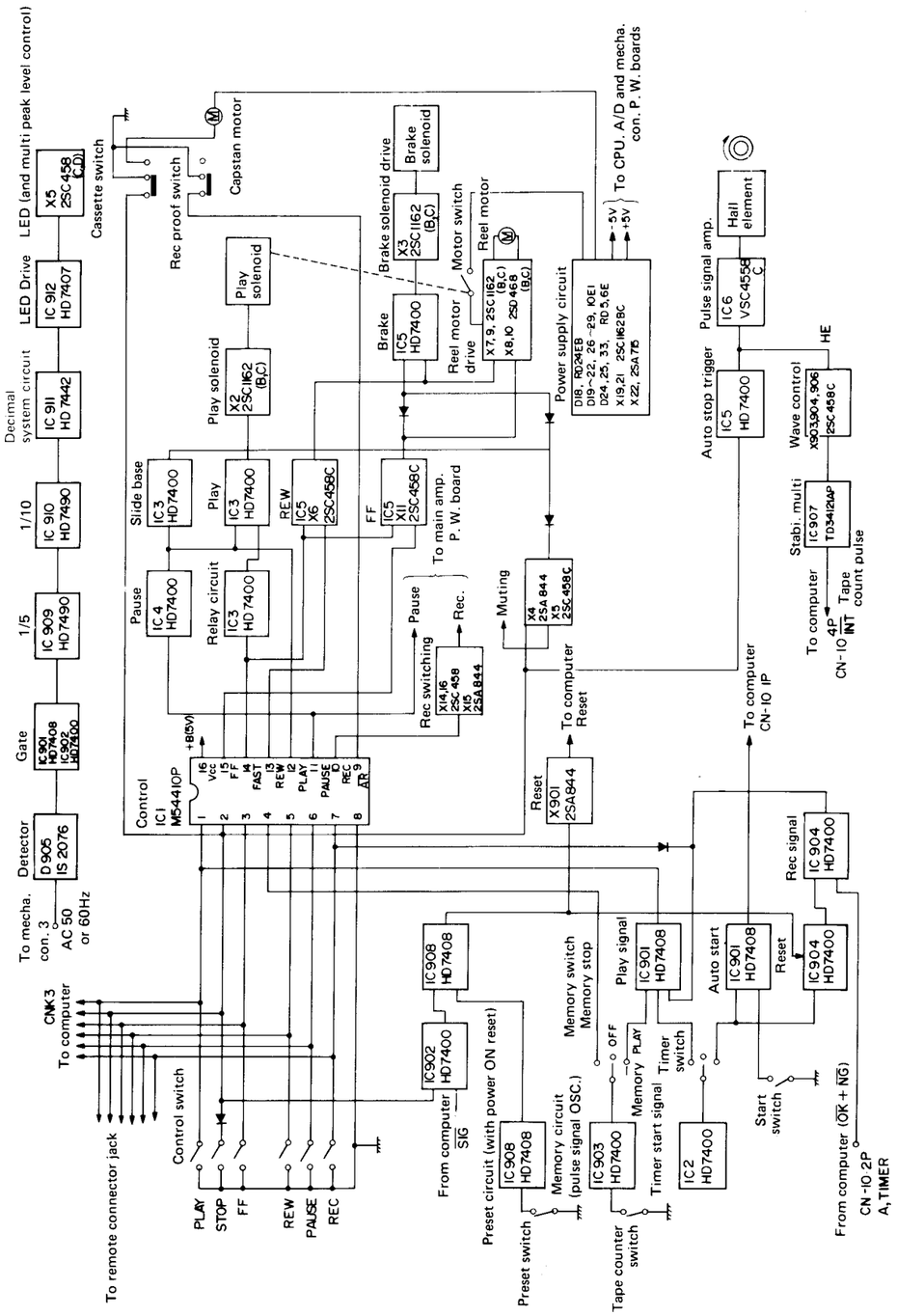
Computer IC



Filter Circuit (Computer P.W. Board)

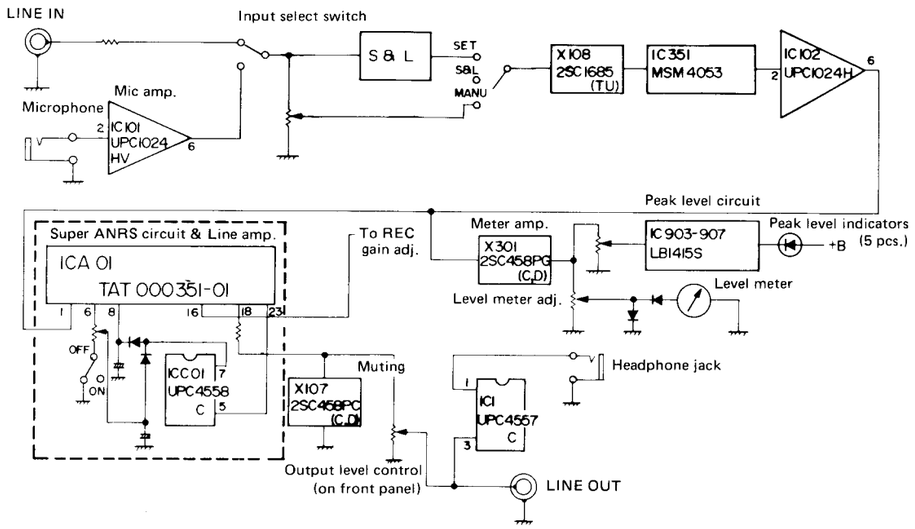


Mecha. Control Circuit

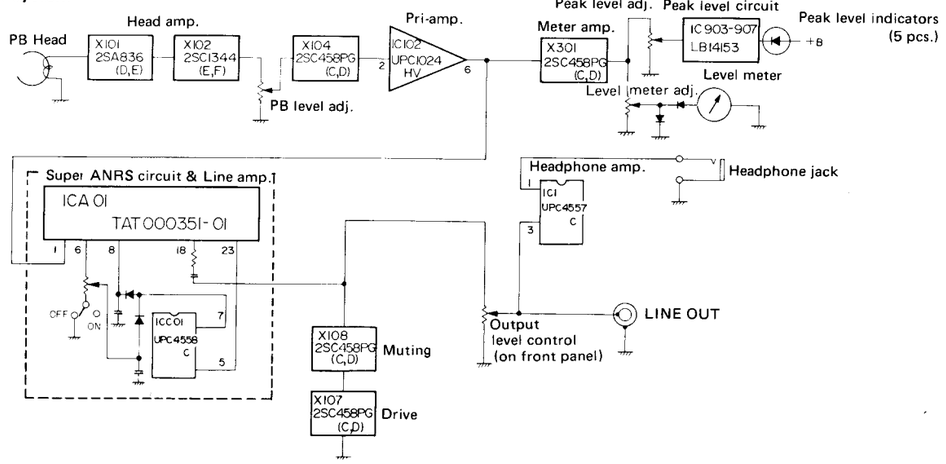


Amplifer Circuit

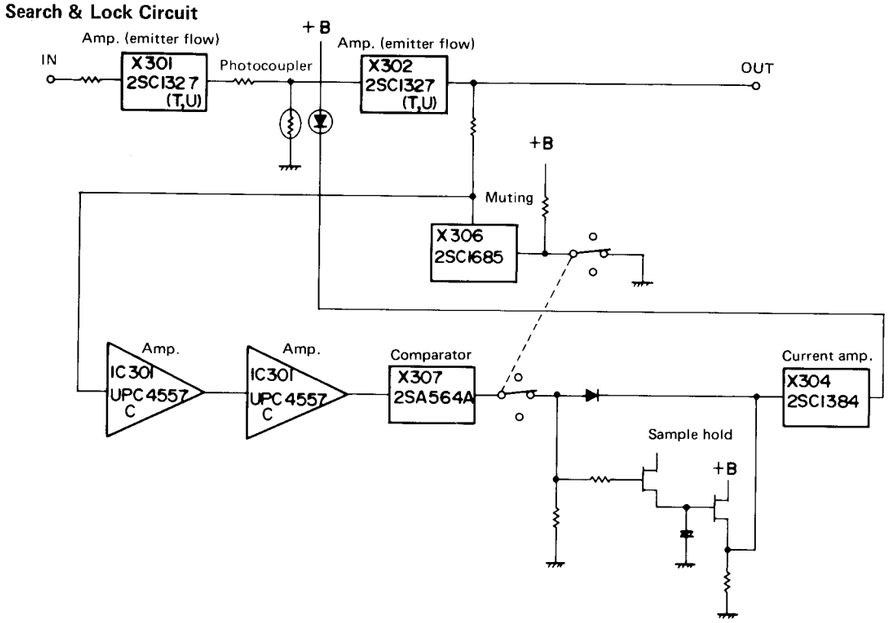
Recording system



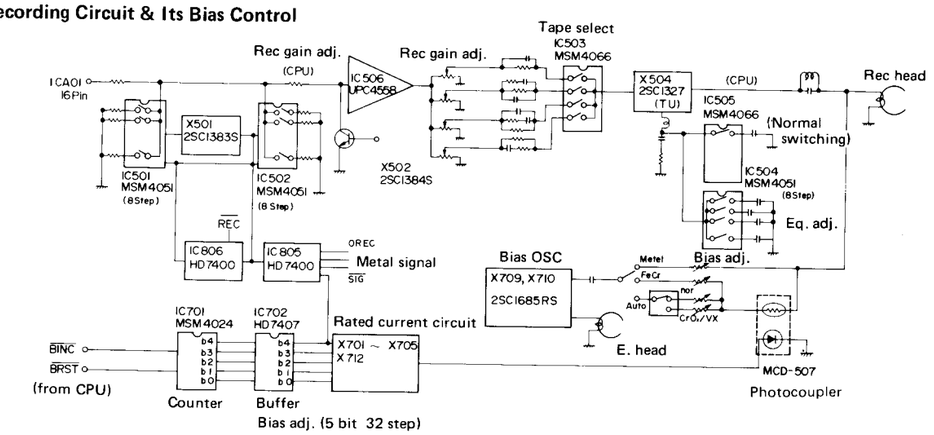
Playback system



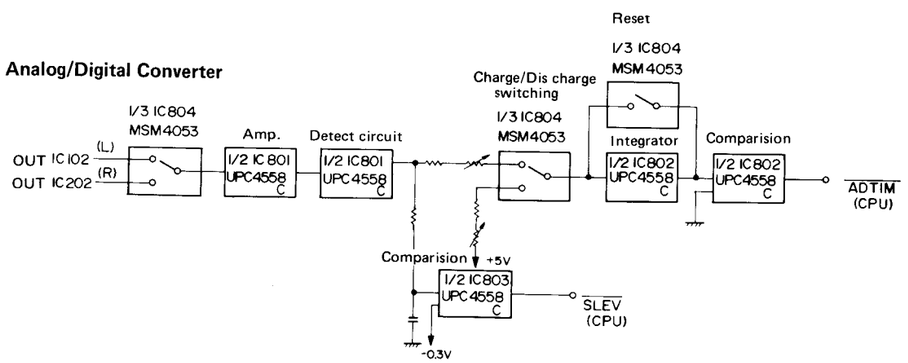
Search & Lock Circuit



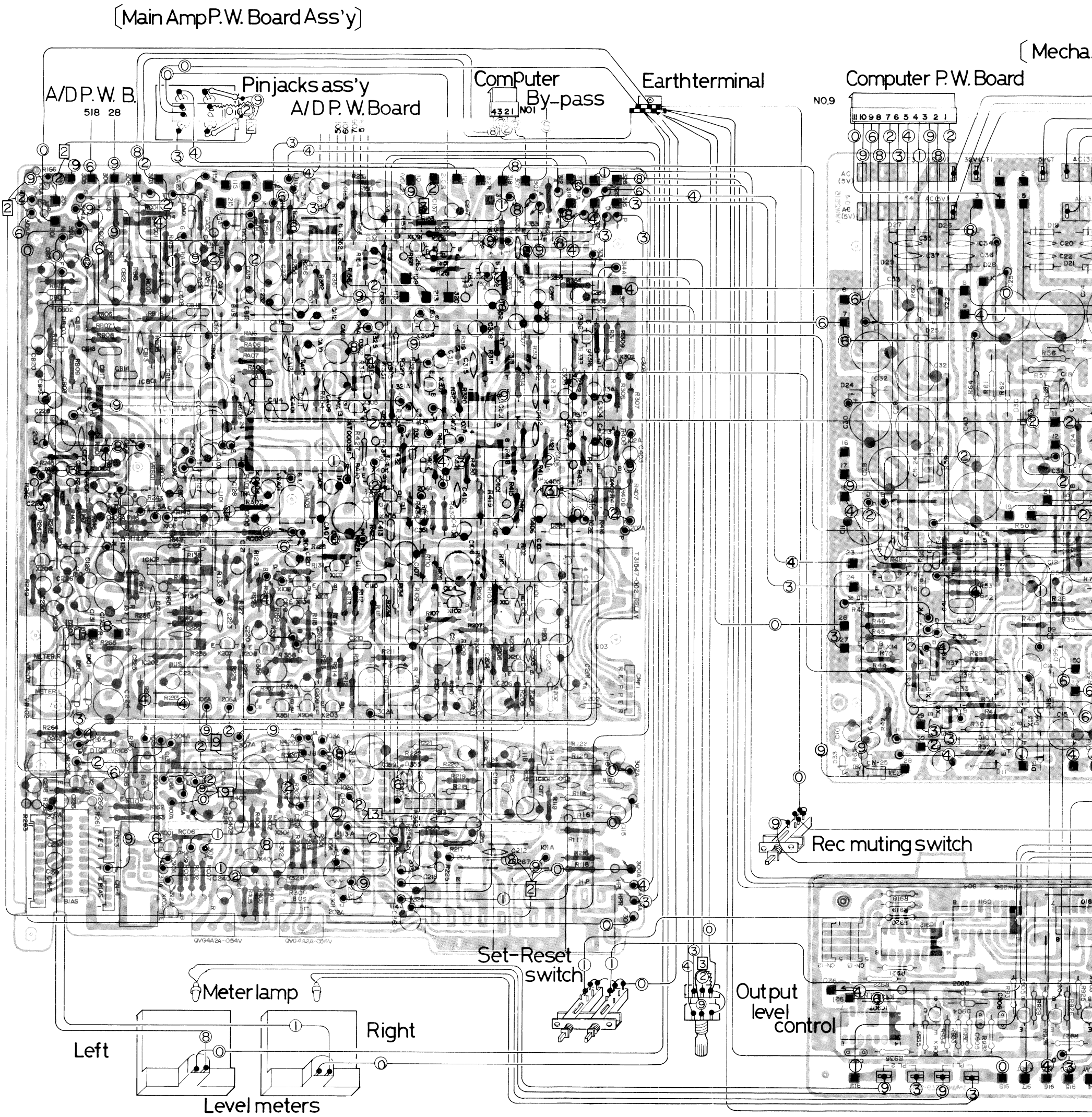
Recording Circuit & Its Bias Control



Analog/Digital Converter



Wiring (1)


〔Main Amp P.W. Board Ass'y〕
A/D P.W. B.
518 28
Pin jacks ass'y
A/D P.W. Board
Computer
By-pass
4321 NO1
Earth terminal
〔Mecha
Computer P.W. Board
NO.9
11 10 9 8 7 6 5 4 3 2 1
Rec muting switch
Set-Reset
switch
Meter lamp
Left
Right
Level meters
Output
level
control

Color code are shown below

1	.....	Brown
2	.....	Red
3	.....	Orange
4	.....	Yellow
5	.....	Green
6	.....	Blue
7	.....	Violet
8	.....	Grey
9	.....	White
0	.....	Black

〔Mecha.Control P.W.Board Ass'y〕

Earth terminal

Computer P.W. Board

NO.9

Power Transformer

Power cord

Connector

Earth lug

Power switch

To diode of By-pass P.W. Board

To A/D P.W. Board

Connector P.W.Board

NO.20

Hall element P.W. Board

NO.19

Connector P.W. Board

NO.22

Switch Holder(L) P.W. Board

NO.18

Computer P.W. Board

NO.10

Timer switch

To REC of By-pass P.W.B.

Rec muting switch

Output level control

507 A/D P.W. Board

510

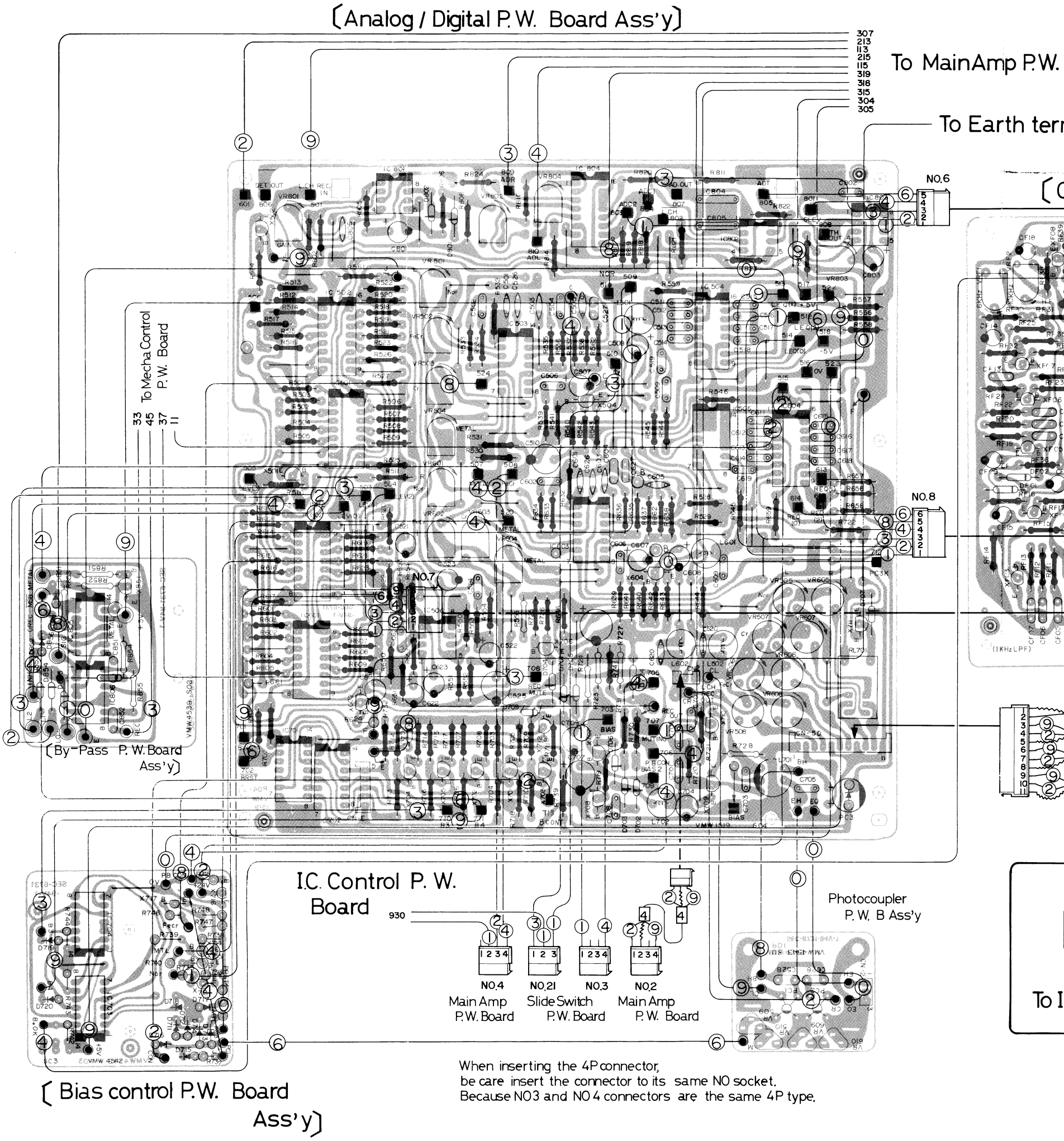
508

509

Memory switch

〔I.C Control P.W. Board Ass'y〕

Wiring (2)



When inserting the 4P connector,
be care insert the connector to its same NO socket.
Because NO3 and NO4 connectors are the same 4P type.

oard Ass'y]

307
213
113
215
115
319
318
315
304
305

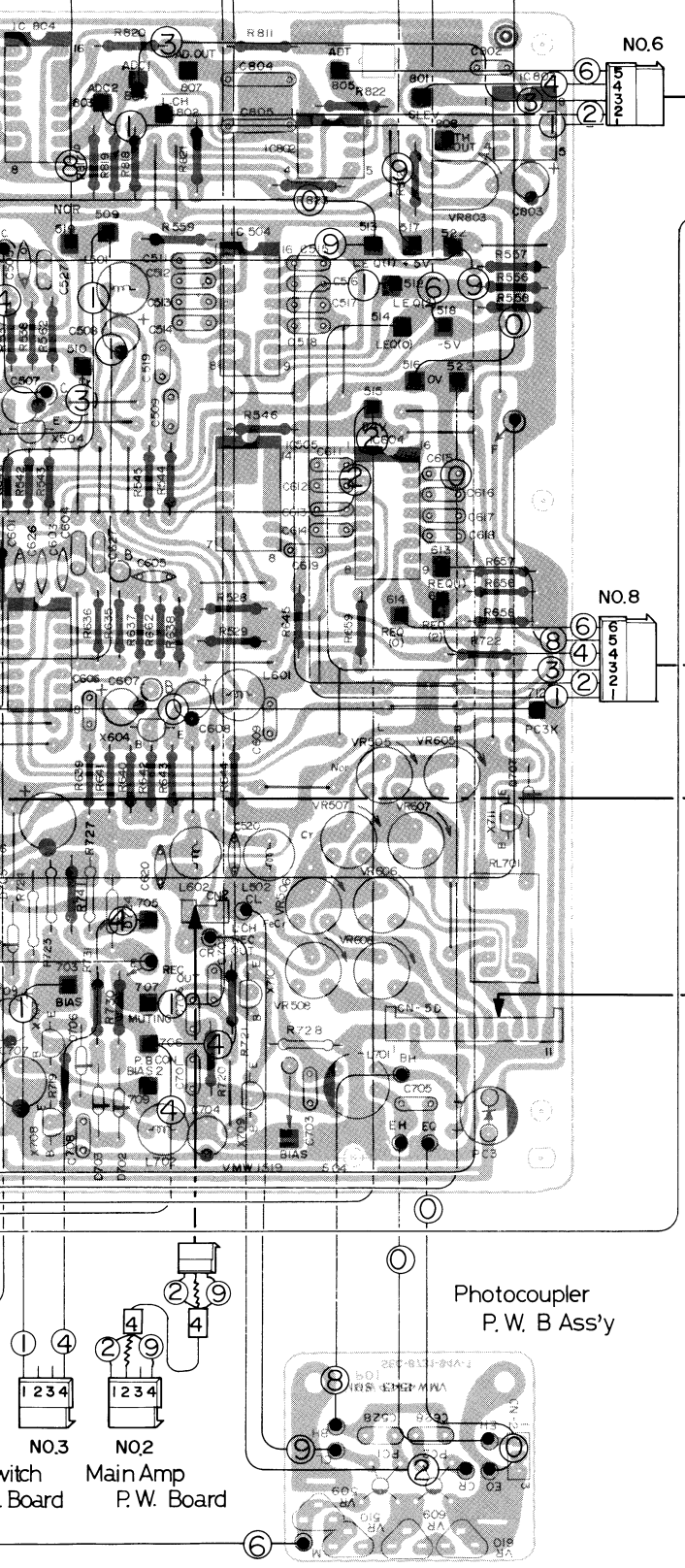
To MainAmp P.W. Board

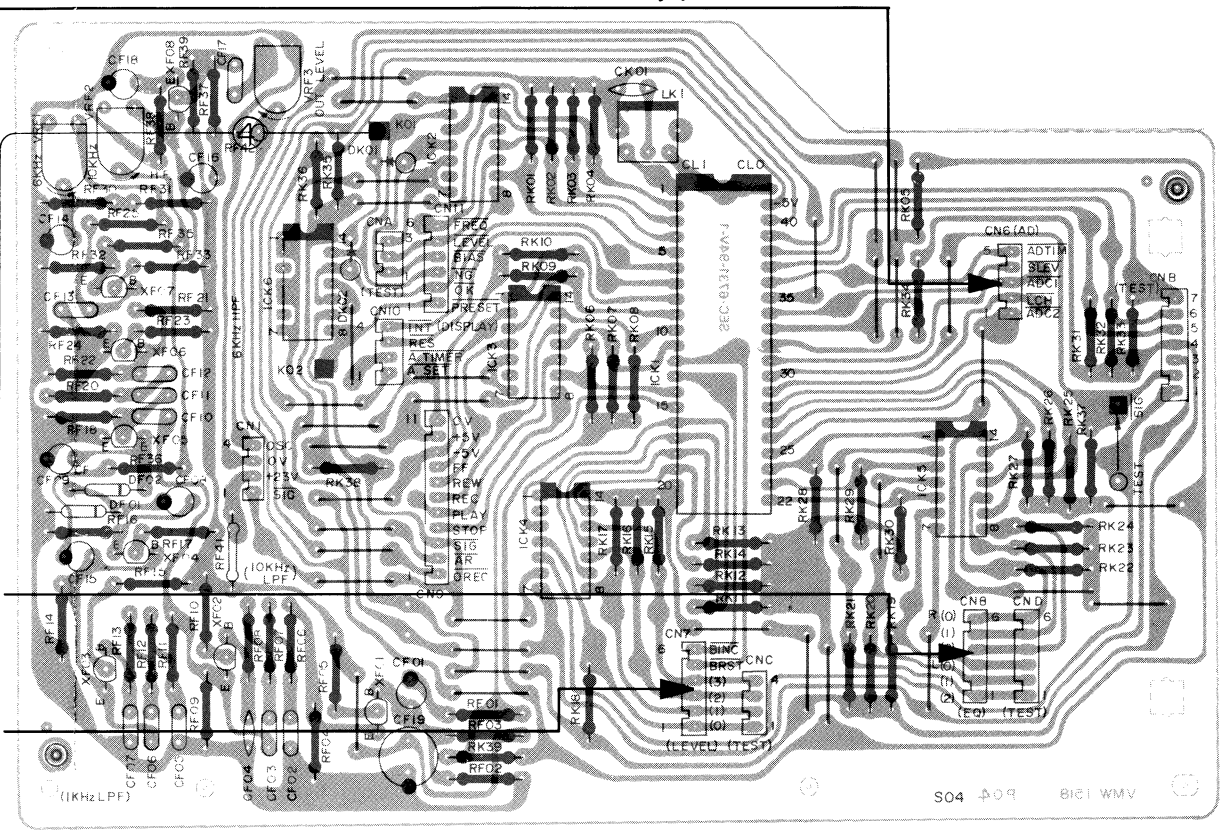
To Earth terminal

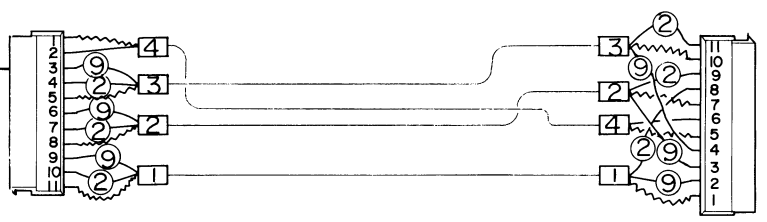
NO.6

NO.8

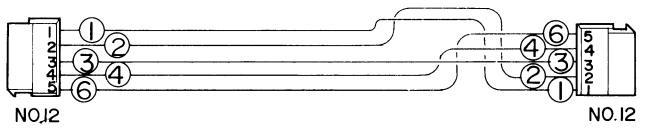
[Computer P.W. Board Ass'y]







To Main Amp P. W. Board



To I.C. Control P.W. Board

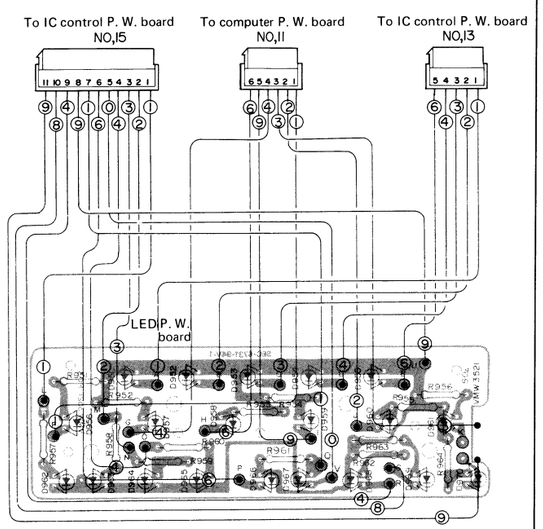
Photocoupler
P. W. B Ass'y

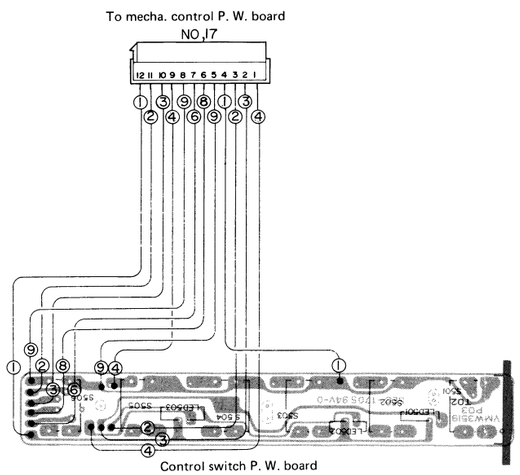
NO.3
witch
. Board

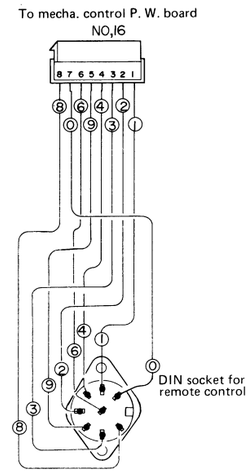
NO.2
Main Amp
P. W. Board

e 4P connector,
connector to its same NO socket.
NO 4 connectors are the same 4P type.

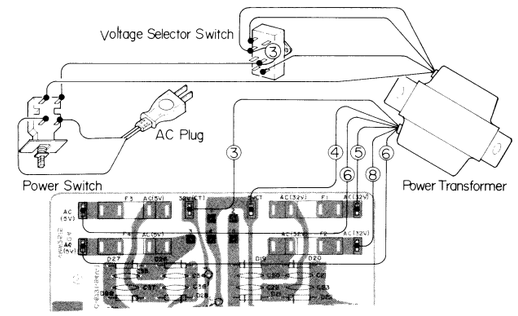
Wiring (3)



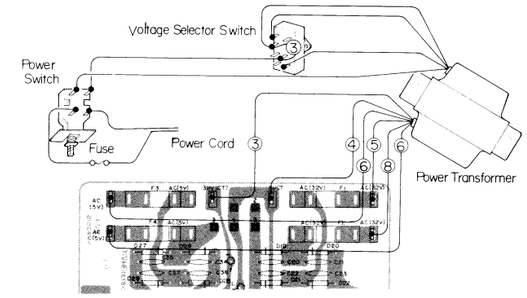


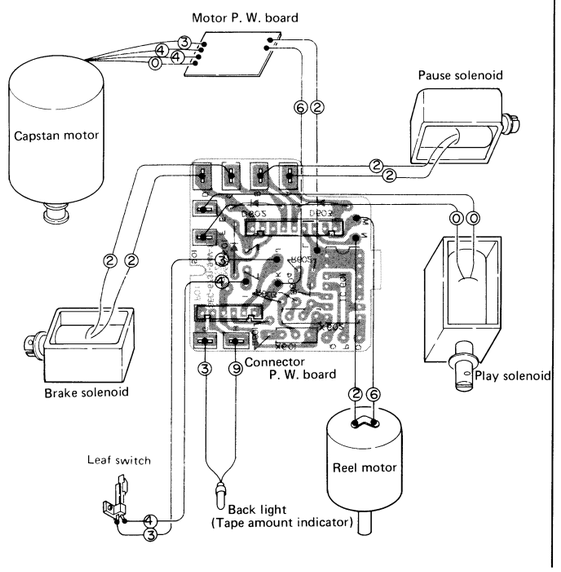


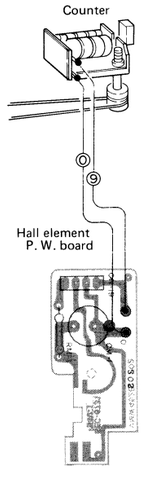
KD-A8 A/E

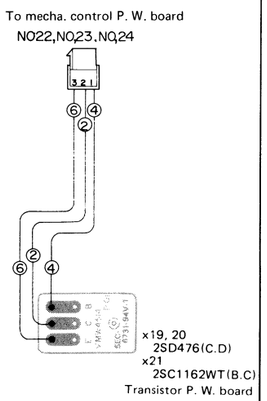


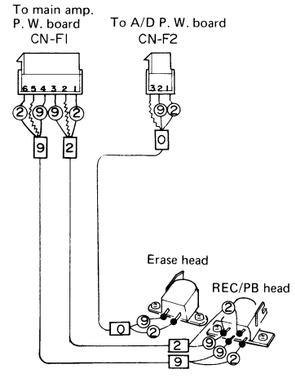
KD-A8 B



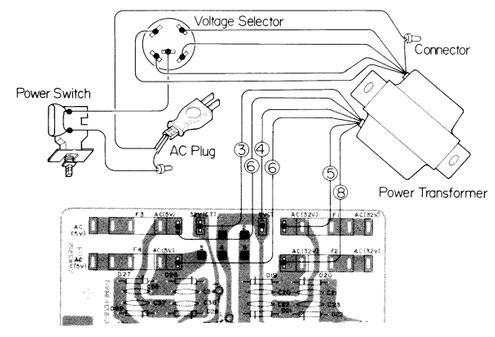








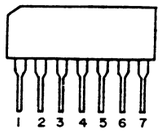
KD-A8 U



Instruction of ICs

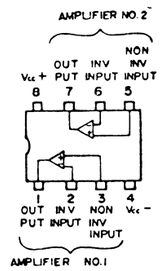
Amplifier Circuit

IC101, 201 UPC1024HV
IC102, 202 UPC1024H



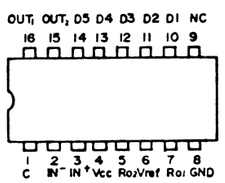
IC C01 UPC4558C

(Top View)

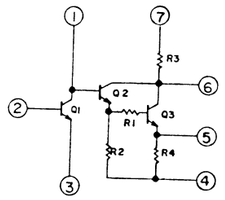


IC351 LB1415S

(Top View)

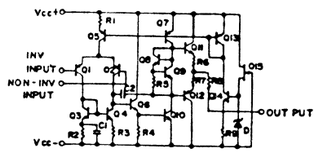


Microphone & Amp.
Pri-Amp.



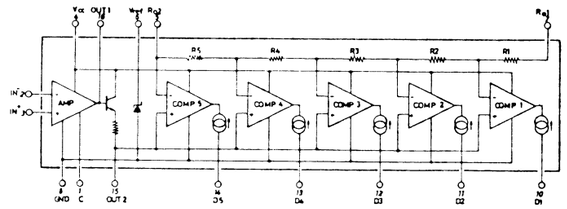
ANRS Control Amp.

Equivalent Circuit (½)



Multi-peak level circuit

Equivalent Circuit

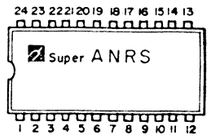


Mechanical Control Circuit

IC501 M54410P See the service manual of KD-85 A/B/C/E/J/U (No. 4165—page 7)

ICA01, B01 TAT000351-01
Super ANRS & Line Amp.

(Top View)

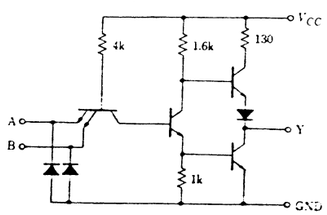


IC352 UPC4557C
Headphone Amp.
Top view is the same as UPC4558C.
Equivalent circuit is the same as UPC4558C except R8 only.

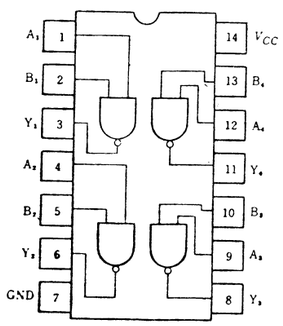
IC502, 503
504, 505

HD7400

Equivalent Circuit

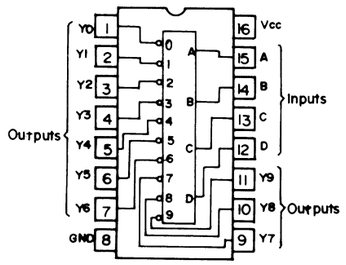


(Top View)



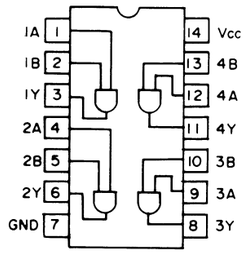
HD7442

(Top View)



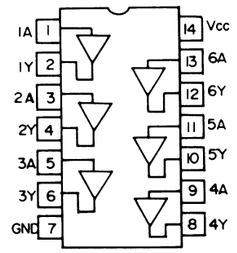
HD7408

(Top View)

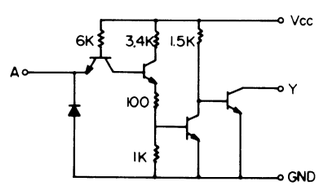


HD7407

(Top View)

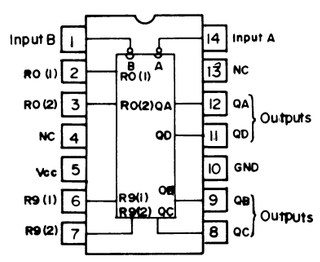


Circuit (1/6)

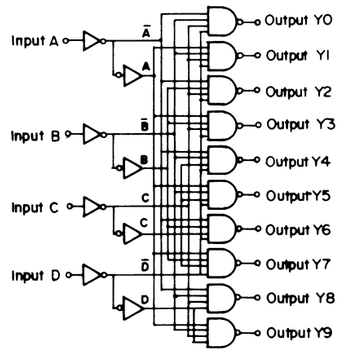


HD7490

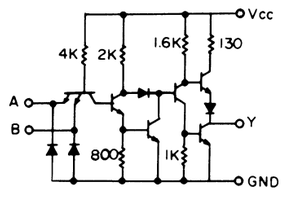
(Top View)



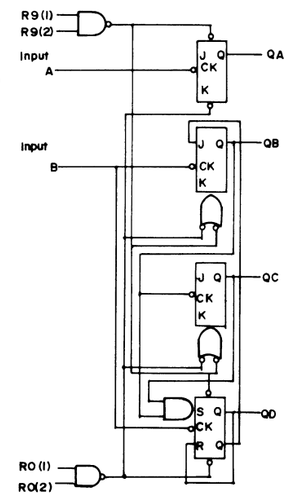
Block diagram



Circuit (¼)

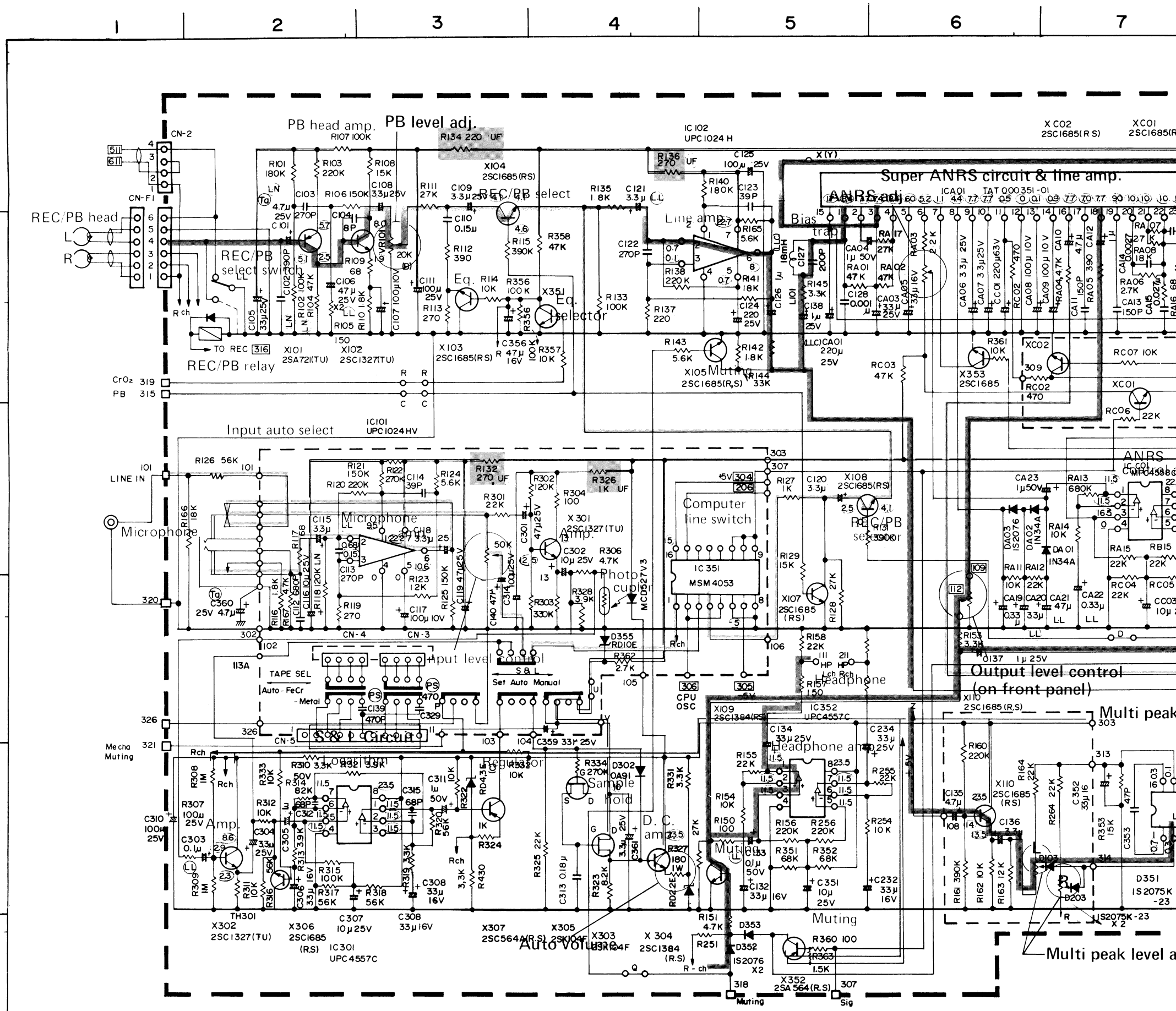


Block diagram



Standard Schematic Diagram of KD-A8

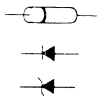
Main Amplifier Circuit



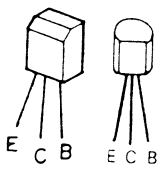
NOTES:

1. Unless otherwise specified, all resistors are 1/4W, ±5% carbon resistors.
   And all capacitors are 50V fixed ceramic capacitors or 50V carbon resistors.
2. UF – Unflammage carbon resistor
   MF – Metal film resistor
   OMF – Oxided metal film resistor
   Ta – Tantalum solid electrolytic capacitor
   LL – +20% low leak current electrolytic capacitor
   PP – Polypropylene capacitor
   PS – Polystyrene capacitor
   MM – Metallized mylar capacitor
   NP – Non-polarized electrolytic capacitor
3. Blue line shows the signal at playback.
   Red line shows the signal at recording and +B circuits.
4. ▒▒▒ parts are safety assurance parts. When replacing those parts, make sure to use the specified one.

– Diode –

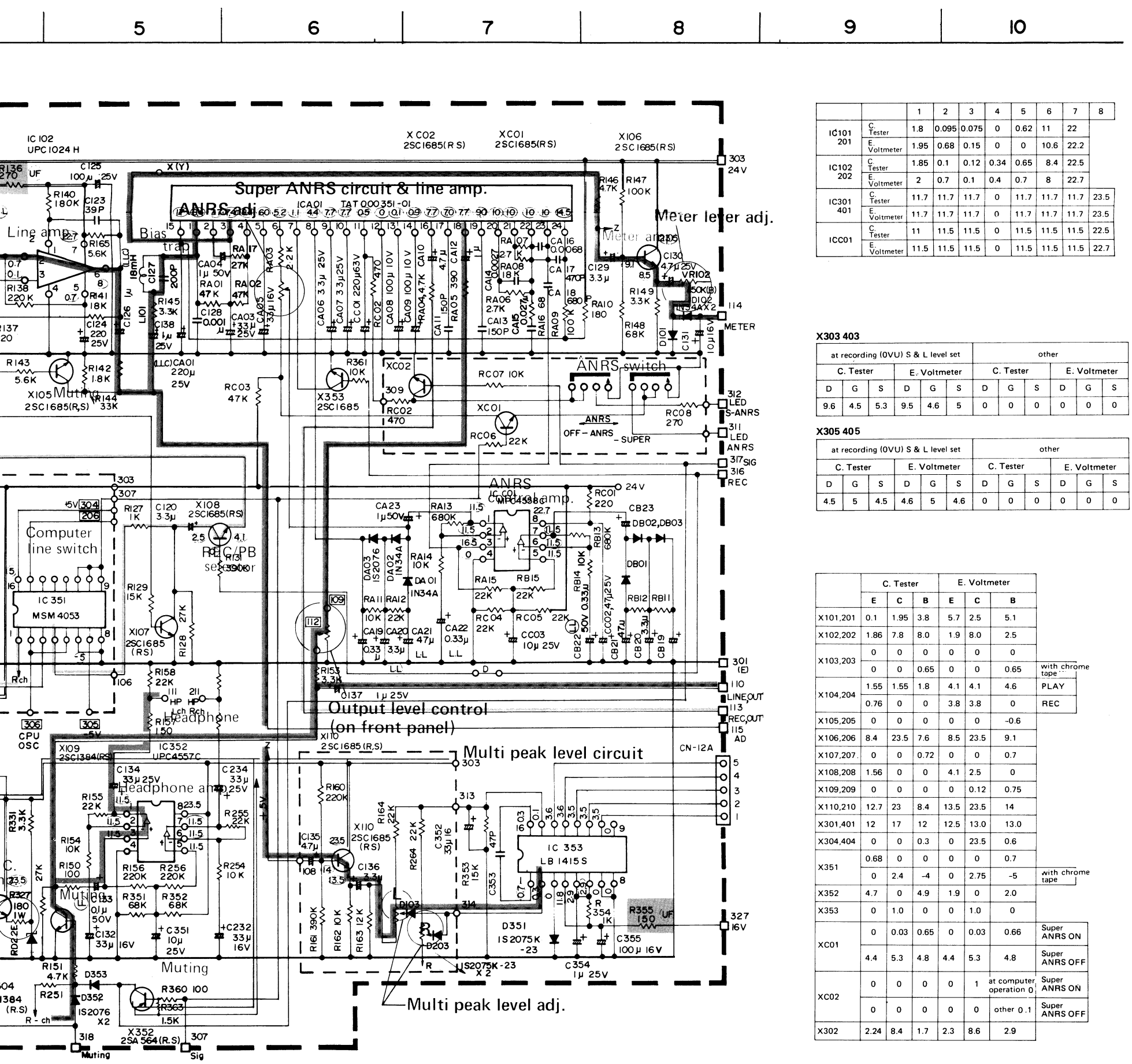


– Transistor –



		1
ICA01 B01	C. Tester	7.4
	E. Voltmeter	8.4
IC351	C. Tester	0
	E. Voltmeter	0
IC353	C. Tester	0.64
	E. Voltmeter	0.7

C. Tester = Circuit Tester (20kΩ
E. Voltmeter = Electronic Voltm



		1	2	3	4	5	6	7	8
IC101 201	C. Tester	1.8	0.095	0.075	0	0.62	11	22	
	E. Voltmeter	1.95	0.68	0.15	0	0	10.6	22.2	
IC102 202	C. Tester	1.85	0.1	0.12	0.34	0.65	8.4	22.5	
	E. Voltmeter	2	0.7	0.1	0.4	0.7	8	22.7	
IC301 401	C. Tester	11.7	11.7	11.7	0	11.7	11.7	11.7	23.5
	E. Voltmeter	11.7	11.7	11.7	0	11.7	11.7	11.7	23.5
ICC01	C. Tester	11	11.5	11.5	0	11.5	11.5	11.5	22.5
	E. Voltmeter	11.5	11.5	11.5	0	11.5	11.5	11.5	22.7

X303 403

at recording (0VU) S & L level set						other					
C. Tester			E. Voltmeter			C. Tester			E. Voltmeter		
D	G	S	D	G	S	D	G	S	D	G	S
9.6	4.5	5.3	9.5	4.6	5	0	0	0	0	0	0

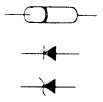
X305 405

at recording (0VU) S & L level set						other					
C. Tester			E. Voltmeter			C. Tester			E. Voltmeter		
D	G	S	D	G	S	D	G	S	D	G	S
4.5	5	4.5	4.6	5	4.6	0	0	0	0	0	0

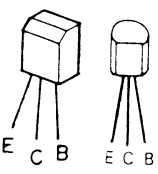
	C. Tester			E. Voltmeter			
	E	C	B	E	C	B	
X101,201	0.1	1.95	3.8	5.7	2.5	5.1	
X102,202	1.86	7.8	8.0	1.9	8.0	2.5	
X103,203	0	0	0	0	0	0	
	0	0	0.65	0	0	0.65	with chrome tape
X104,204	1.55	1.55	1.8	4.1	4.1	4.6	PLAY
	0.76	0	0	3.8	3.8	0	REC
X105,205	0	0	0	0	0	-0.6	
X106,206	8.4	23.5	7.6	8.5	23.5	9.1	
X107,207	0	0	0.72	0	0	0.7	
X108,208	1.56	0	0	4.1	2.5	0	
X109,209	0	0	0	0	0.12	0.75	
X110,210	12.7	23	8.4	13.5	23.5	14	
X301,401	12	17	12	12.5	13.0	13.0	
X304,404	0	0	0.3	0	23.5	0.6	
X351	0.68	0	0	0	0	0.7	
	0	2.4	-4	0	2.75	-5	with chrome tape
X352	4.7	0	4.9	1.9	0	2.0	
X353	0	1.0	0	0	1.0	0	
XC01	0	0.03	0.65	0	0.03	0.66	Super ANRS ON
	4.4	5.3	4.8	4.4	5.3	4.8	Super ANRS OFF
XC02	0	0	0	0	1	at computer operation 0	Super ANRS ON
	0	0	0	0	0	other 0.1	Super ANRS OFF
X302	2.24	8.4	1.7	2.3	8.6	2.9	

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ICA01 B01	C. Tester	7.4	7.5	8	6.5	5.8	5	1	4.2	7.4	7.4	0.35	0	0.8	0.7	17	7.5	8.8	7.6	8.8	10	10	10	10	14.5
	E. Voltmeter	8.4	7.7	7.4	8.4	6.0	5.2	1.1	4.4	7.7	7.7	0.5	0	0.1	0.9	17.0	7.7	9.0	7.7	9.0	10.3	10.3	10.3	10.3	14.5
IC351	C. Tester	0	0	0	0	0	0	-5	0	4.8	4.8	4.8	0	0	0	0	4.75								
	E. Voltmeter	0	0	0	0	0	0	-5	0	4.95	4.95	4.95	0	0	0	0	4.8								
IC353	C. Tester	0.64	0	0	10.7	2.8	2.8	0	0	0	3.2	3.2	3.2	3.2	3.2	0.1	0.3								
	E. Voltmeter	0.7	0.3	0	11.8	2.9	2.9	0	0	0	3.5	3.5	3.5	3.5	3.5	0.1	0.3								

– Diode –

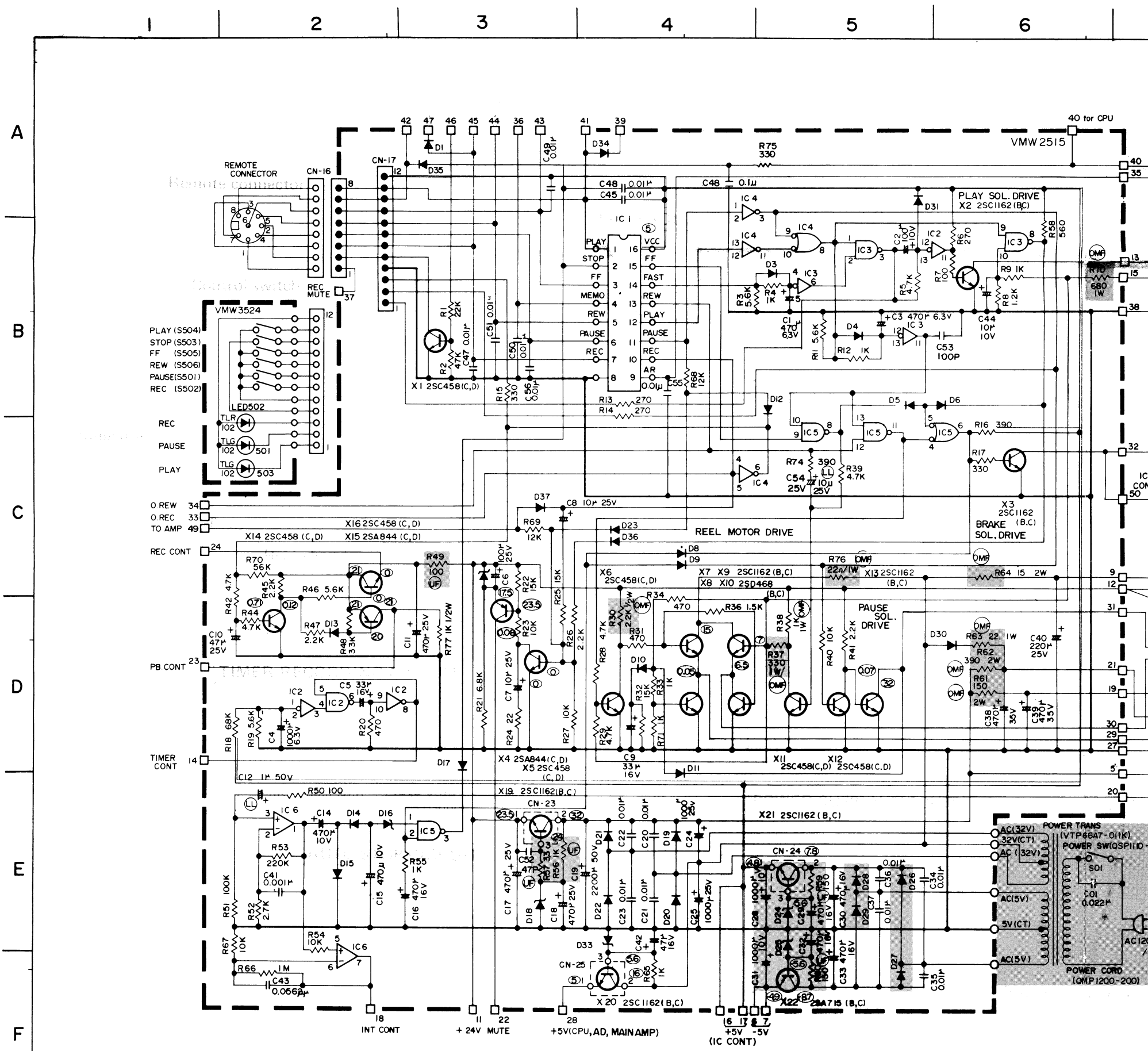


– Transistor –



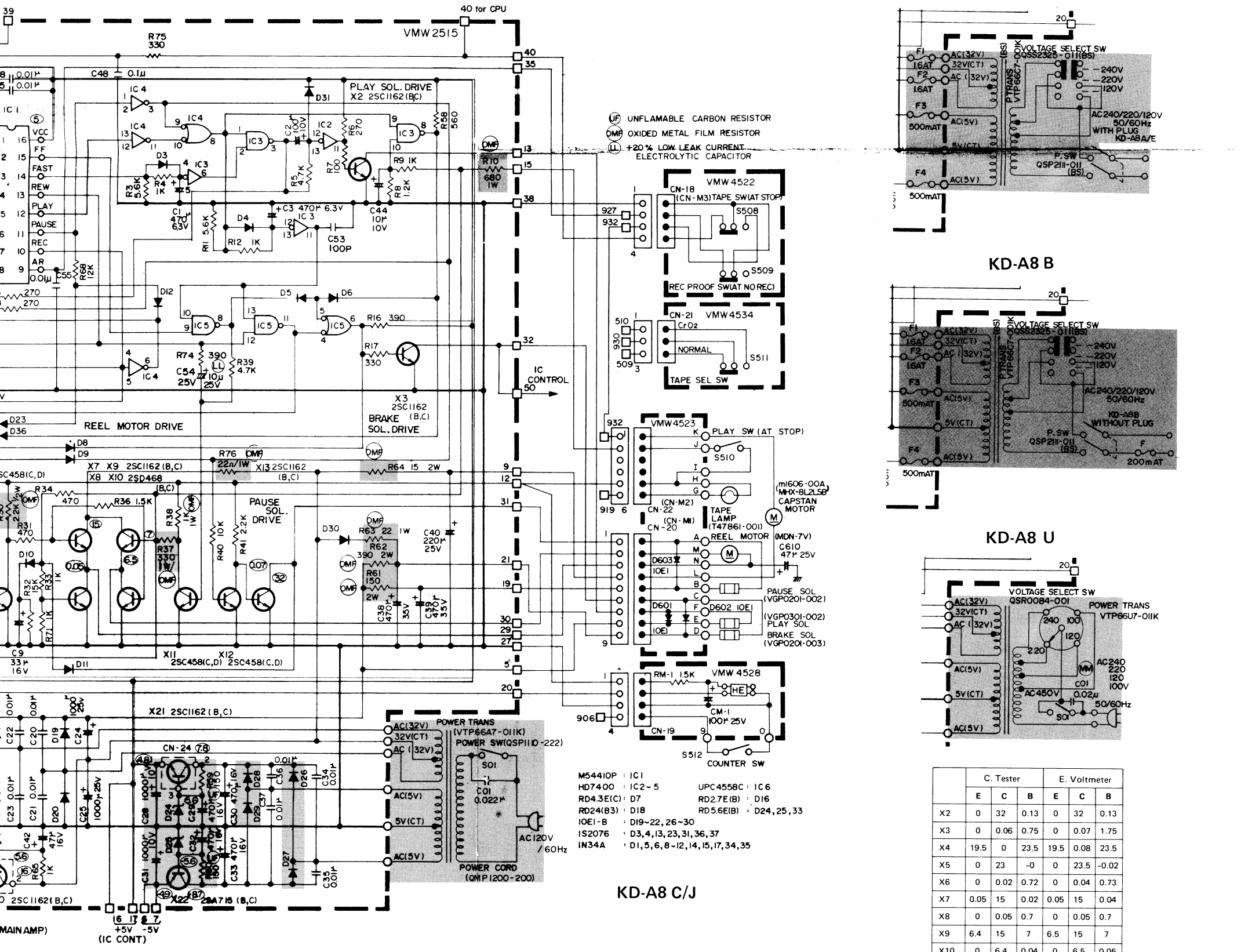
C. Tester = Circuit Tester (20kΩ impedance)
E. Voltmeter = Electronic Voltmeter

Mecha Control Circuit



		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC1	C. Tester	4.5	4.5	4.5	3.1	4.5	4.5	4.5	0	4.8	0.12	0.12	4.6	0.12	0.12	0.12	4.7
	E. Voltmeter	4.7	4.7	4.7	3.1	4.7	4.7	4.7	-0.01	4.9	0.12	0.12	4.7	0.12	0.12	0.12	4.8
IC2	C. Tester	1.45	1.45	0.01	0.01	3.5	3.5	0	3.5	0.32	0.32	0.13	1.47	1.47	4.8		
	E. Voltmeter	1.5	1.5	0.04	0.04	3.6	3.8	0	3.7	0.34	0.34	0.135	1.5	1.5	4.8		
IC3	C. Tester	3.3	3.5	0.12	0.74	0.74	3.5	0	0.01	3.3	3.8	0.02	3.3	3.3	4.7		
	E. Voltmeter	3.4	3.8	0.12	0.8	0.8	3.8	0	0.04	3.4	3.9	0.05	3.4	3.4	4.8		

		1	2	3	4	5	6	7
IC4	C. Tester	0.12	0.12	3.4	0.12	0.12	3.4	0
	E. Voltmeter	0.13	0.13	3.4	0.12	0.12	3.4	0
IC5	C. Tester	-0.64	0.5	4.4	3.3	0.33	3.2	0
	E. Voltmeter	-0.65	0.5	4.8	3.4	0.34	3.2	0
IC6	C. Tester	0.04	0	0	-5	0.025	0	0.04
	E. Voltmeter	0.04	0.04	0	-5	0.04	0	0.04



KD-A8 A/E

KD-A8 B

KD-A8 U

M54410P : IC1
HD7400 : IC2~5
RD4.3E(C) : D7
RD24(B3) : D18
10E1-B : D19~22, 26~30
1S2076 : D3,4,13,23,31,36,37
IN34A : D1,5,6,8~12,14,15,17,34,35
UPC4558C : IC6
RD2.7E(B) : D16
RD5.6E(B) : D24,25,33

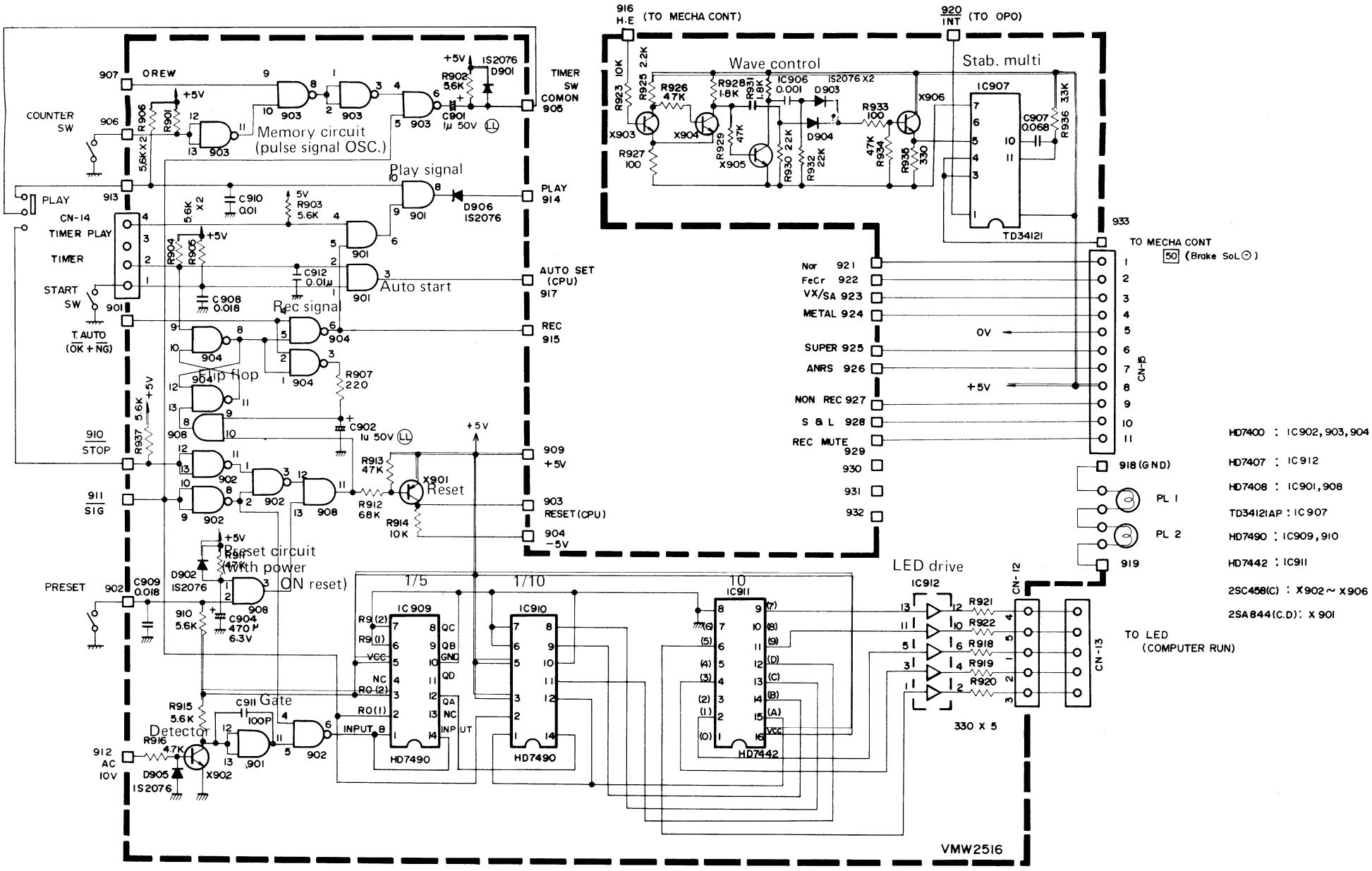
KD-A8 C/J

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X2	0	32	0.13	0	32	0.13
X3	0	0.06	0.75	0	0.07	1.75
X4	19.5	0	23.5	19.5	0.08	23.5
X5	0	23	-0	0	23.5	-0.02
X6	0	0.02	0.72	0	0.04	0.73
X7	0.05	15	0.02	0.05	15	0.04
X8	0	0.05	0.7	0	0.05	0.7
X9	6.4	15	7	6.5	15	7
X10	0	6.4	0.04	0	6.5	0.05
X11	0	0.2	0.75	0	0.2	0.75
X12	0	0.08	0.72	0	0.07	0.74
X13	0	32	0.06	0.74	32	0.07
X14	0	0.12	0.7	0	0.12	0.71
X15	21	21	20	21	21	20
X16	0	21	0	0	21	0
X19	23.5	32.5	24	23.5	32	24
X1	0	-0	0.61	0	-0.01	0.63
X20	5	16	5.6	5	16	5.6
X21	4.7	5.5	7.8	4.8	7.8	5.6
X22	-4.9	-8.7	-5.6	-5	-8.8	-5.6

		11	12	13	14	15	16
		0.12	4.6	0.12	0.12	0.12	4.7
		0.12	4.7	0.12	0.12	0.12	4.8
		0.13	1.47	1.47	4.8		
		0.135	1.5	1.5	4.8		
		0.02	3.3	3.3	4.7		
		0.05	3.4	3.4	4.8		

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC4	C. Tester	0.12	0.12	3.4	0.12	0.12	3.4	0	3.3	3.4	0.04	0.04	4.6	4.6	4.7
	E. Voltmeter	0.13	0.13	3.4	0.12	0.12	3.4	0	3.4	3.4	0.05	0.05	4.8	4.8	4.8
IC5	C. Tester	-0.64	0.5	4.4	3.3	0.33	3.2	0	3.3	0.12	0.02	3.4	0.12	0.02	4.7
	E. Voltmeter	-0.65	0.5	4.8	3.4	0.34	3.2	0	3.4	0.12	0.05	3.4	0.12	0.05	4.9
IC6	C. Tester	0.04	0	0	-5	0.025	0	0.04	4.8						
	E. Voltmeter	0.04	0.04	0	-5	0.04	0	0.04	4.8						

IC Control Circuit



		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC901	C. Tester	4.6	4.6	4.9	4.6	4.5	3.6	0	4.2	3.6	4.7	1.9	2.4	2.4	4.8		
	E. Voltmeter	4.8	4.8	5.1	4.8	4.7	3.6	0	4.6	3.6	4.8	2.0	2.5	2.5	4.8		
IC902	C. Tester	0.1	0.1	3.6	0.1	1.9	3.6	0	0.1	4.9	4.9	0.1	4.5	4.5	4.8		
	E. Voltmeter	0.1	0.1	3.7	0.1	1.9	3.6	0	0.1	5.0	5.0	0.1	4.7	4.7	4.8		
IC903	C. Tester	3.6	3.6	0.1	0.1	4.9	3.6	0	3.6	0.2	0.2	0.2	4.6	4.6	4.8		
	E. Voltmeter	3.7	3.7	0.1	0.1	5.0	4.8	0	3.7	0.2	0.1	0.1	4.8	4.8	4.8		
IC904	C. Tester	0.1	0.1	3.8	0.1	0.1	4.8	0	3.6	4.6	0.1	0.1	3.6	3.6	4.8		
	E. Voltmeter	0.1	0.1	3.7	0.1	0.1	4.7	0	0.1	4.8	3.7	3.7	0.1	3.7	4.8		
IC907	C. Tester	3.6	0	0	0	0.6	0.1	0	0	0.9	4.8	0.9	0	0	4.8		
	E. Voltmeter	3.7	0	0	0	0.6	0.1	0	0	0.9	4.8	1.0	0	0	4.8		
IC908	C. Tester	4.4	4.6	4.6	1.6	1.6	3.6	0	3.6	3.6	3.6	3.6	3.6	3.6	4.8		
	E. Voltmeter	4.4	4.8	3.6	1.6	1.6	3.8	0	3.7	3.7	4.1	4.1	3.6	3.6	4.8		
IC909	C. Tester	3.6	5	4.8	0	4.8	0	0	0.1	0.1	0	0.1	0.1	0	3.6		
	E. Voltmeter	3.6	5.0	4.8	0	4.8	0	0	0.1	0.1	0.1	0.1	0.1	0	3.6		
IC910	C. Tester	0.1	4.9	4.8	0	4.8	0	0	0.1	0.1	0	0.1	0.1	0	0.1		
	E. Voltmeter	0.2	5.0	4.8	0	4.8	0	0	0.1	0.1	0	0.2	0.2	0	0.1		
IC911	C. Tester	0.1	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6	3.6	3.6	0.1	0.1	0.1	0.1	4.8
	E. Voltmeter	0.1	3.7	3.9	3.7	3.9	3.7	3.9	0	3.7	3.9	3.7	0.1	0.2	0.2	0.2	4.8
IC912	C. Tester	3.6	3.3	3.6	3.3	3.6	3.2	0	0	1.6	3.3	3.6	3.3	3.6	4.8		
	E. Voltmeter	3.7	3.5	3.7	3.5	3.7	3.5	0	0.5	1.7	3.5	3.7	3.5	3.7	4.9		

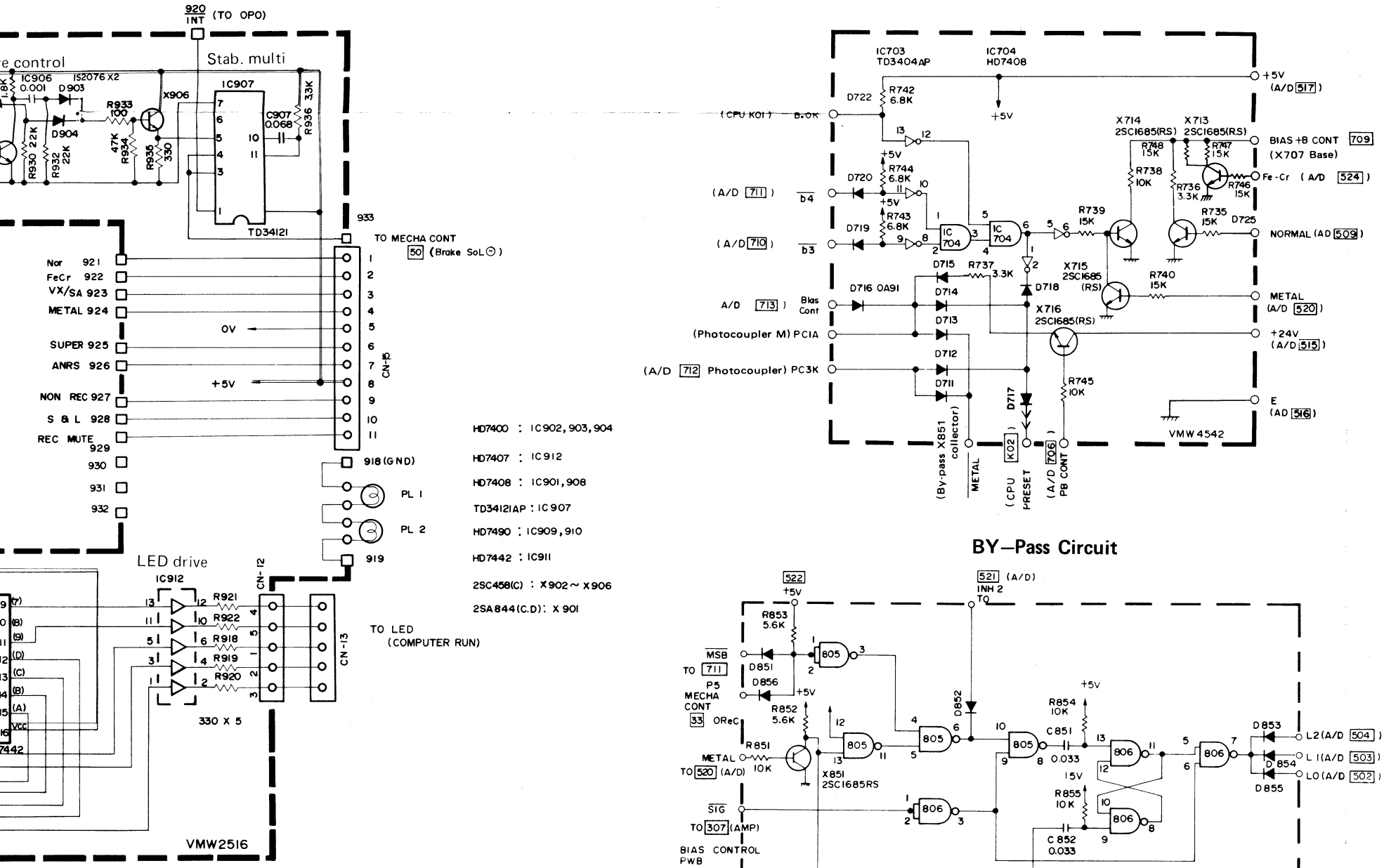
	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X901	4.8	-5	4.1	4.9	-5	4.5
X902	0	2.4	0.1	0	2.5	0.2
X903	0.3	0.3	0.9	0.3	0.3	1.0
X904	0.2	4.6	0.3	0.3	4.7	0.3
X906	0.6	4.8	0	0.6	4.8	0

IC806

	E. Voltmeter at PB	C. Tester at PB
1	4.9	4.9
2	4.9	4.9
3	0.1	0.1
4	0.1	0.1
5	0.1	0.1
6	4.9	4.7
7	0	0
8	4.0	3.9
9	0.1	4.9
10	0.1	0.1
11	0.1	0.1
12	0.1	3.9
13	4.0	4.9
14	5.1	5.0

X851

	E. Voltmeter	C. Tester
B	-5	-3.9
E	0	0
C	5.1	4.9



Bias Control Circuit

BY—Pass Circuit

TO 45 (MECHA CONT) Diode: IS2076

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X901	4.8	-5	4.1	4.9	-5	4.5
X902	0	2.4	0.1	0	2.5	0.2
X903	0.3	0.3	0.9	0.3	0.3	1.0
X904	0.2	4.6	0.3	0.3	4.7	0.3
X906	0.6	4.8	0	0.6	4.8	0

IC806

	E. Voltmeter at PB	C. Tester at PB	E. Voltmeter at REC	C. Tester at REC
1	4.9	4.9	4.9	4.9
2	4.9	4.9	4.9	4.9
3	0.1	0.1	0.1	0.1
4	0.1	0.1	0.1	0.1
5	0.1	0.1	0.1	0.1
6	4.9	4.7	4.9	4.7
7	0	0	0	0
8	4.0	3.9	4.0	3.9
9	0.1	4.9	0.1	4.9
10	0.1	0.1	0.1	0.1
11	0.1	0.1	0.1	0.1
12	0.1	3.9	0.1	3.9
13	4.0	4.9	4.0	4.9
14	5.1	5.0	5.1	5.0

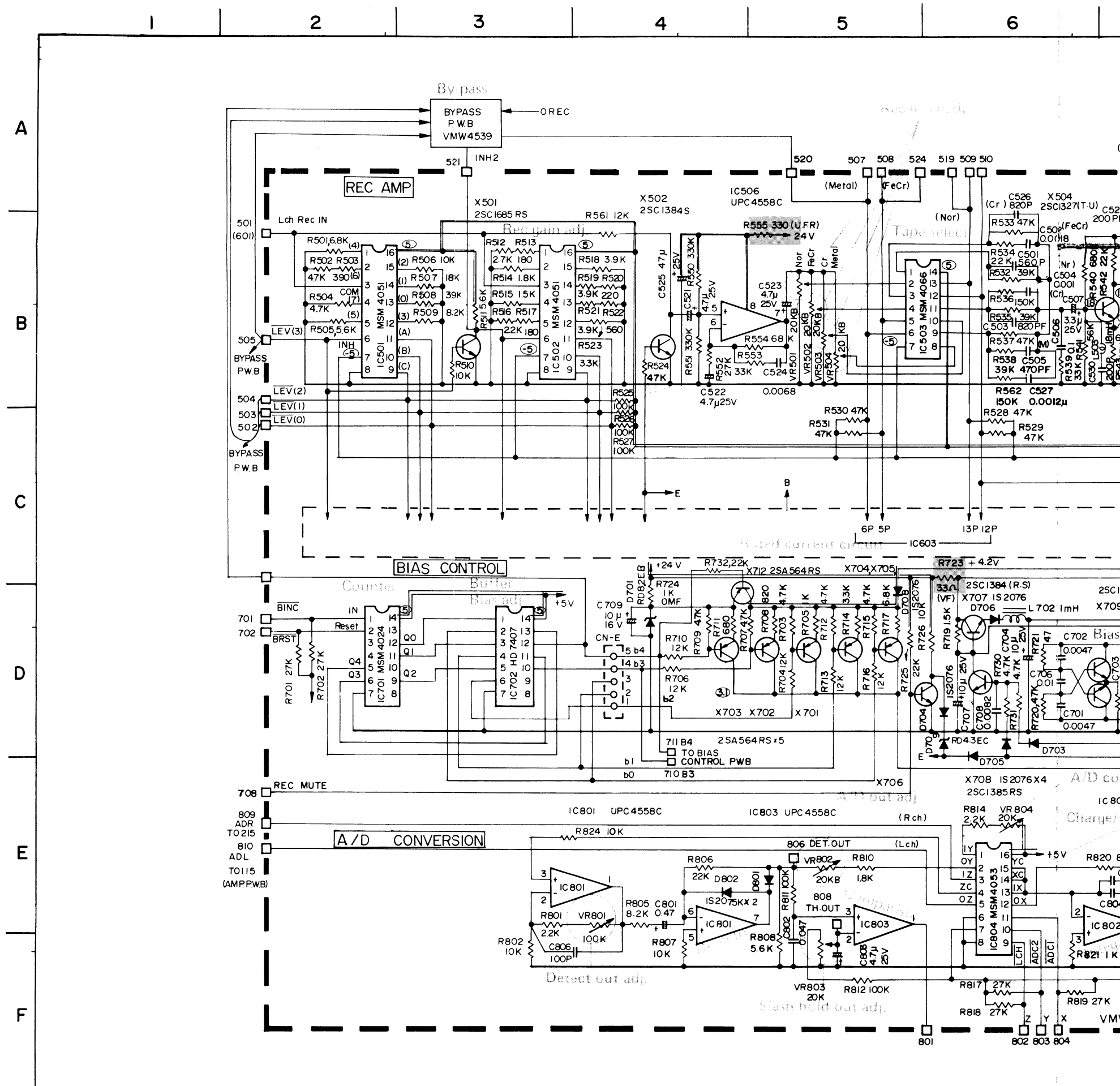
X851

E. Voltmeter		C. Tester
B	-5	-3.9
E	0	0
C	5.1	4.9

IC805

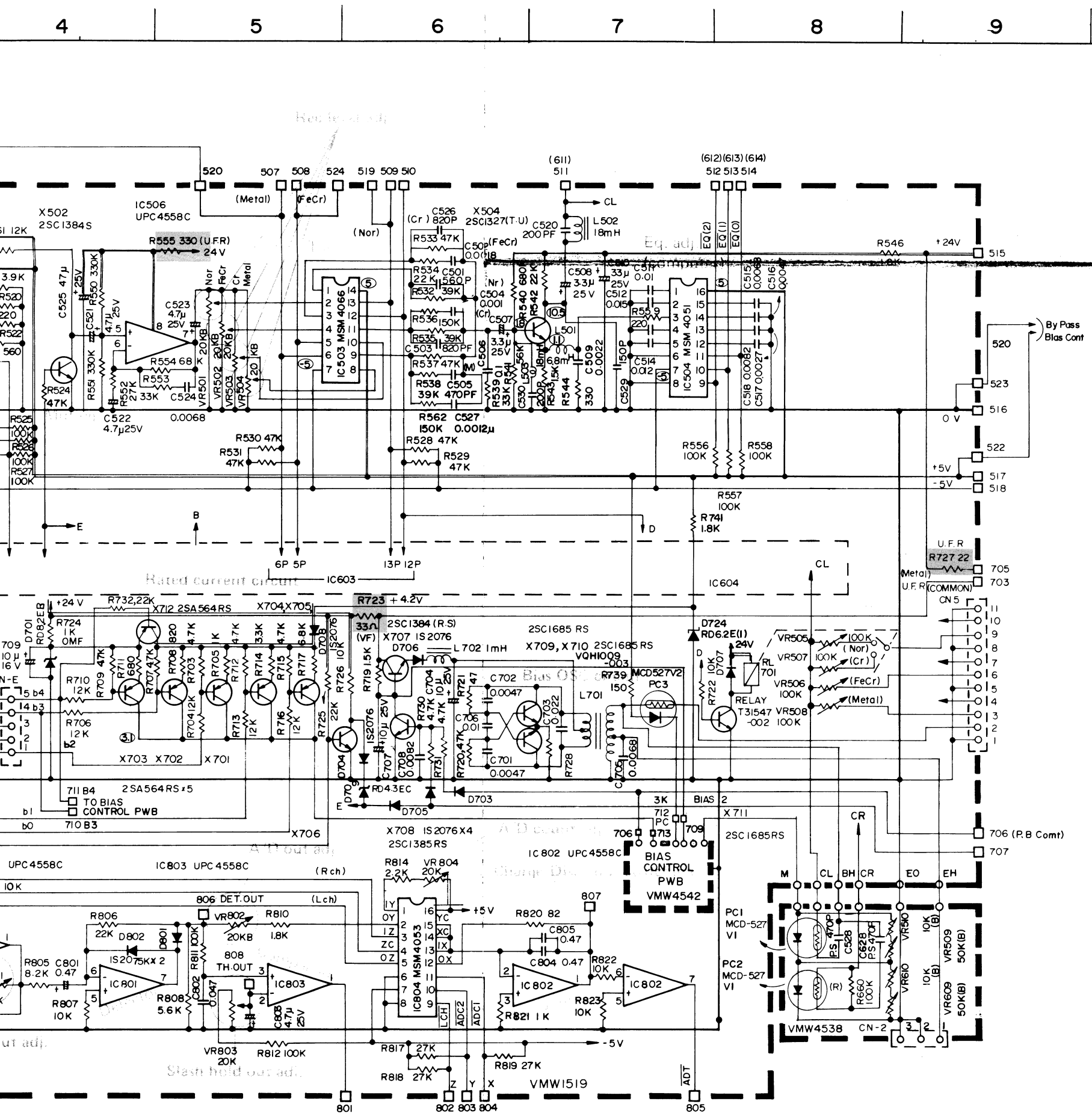
	E. Voltmeter at PB	C. Tester at PB	E. Voltmeter at REC	C. Tester at REC
1	5.0	4.9	5.0	4.9
2	5.0	4.9	5.0	4.9
3	0.1	0.1	0.1	0.1
4	0.1	0.1	0.1	0.1
5	0.1	0.1	0.1	0.1
6	4.3	4.2	4.3	4.2
7	0	0	0	0
8	4.1	3.9	4.1	3.9
9	0.1	0.1	0.1	0.1
10	4.3	4.2	4.3	4.2
11	0.1	0.1	0.1	0.1
12	5.1	5.1	5.1	5.1
13	5.1	4.9	5.1	4.9
14	4.8	5.1	4.8	5.1

Analog Digital Converter Circuit



		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC501	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.7
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC502	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.8
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC503	C. Tester	0	0	0	0	-5.1	-4.1	-5.1	0	0	0	0	-4.1	4.8	4.8		
	E. Voltmeter	0	0	0	0	-5.0	-5.0	-5.0	0	0	0	0	-5.0	4.8	4.8		
IC504	C. Tester	0	0	1.1	0	0	0	-5.1	0	0	5.1	5.1	0	0	0	0	4.8
	E. Voltmeter	0	0	1.1	0	0	0	-5	0	0	5.1	5.1	1.1	0	0	0	4.8
IC506	C. Tester	11.5	11.5	10.0	0	10.0	11.5	11.5	23								
	E. Voltmeter	11.5	11.5	11.4	0	11.3	11.5	11.5	23								
IC601	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.7
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC602	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.7
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8

		1	2	3	4	5	6	7	8	9
IC603	C. Tester	0	0	0	0	-4.1	-4.1	-5.1	0	0
	E. Voltmeter	0	0	0	0	-5.0	-5.0	-5.0	0	0
IC604	C. Tester	0	0	1.1	0	0	0	-5.1	0	0
	E. Voltmeter	0	0	1.1	0	0	0	-5	0	0
IC701	C. Tester	-0.6	-1.0	0	0	0.9	1.1	0	0	1.1
	E. Voltmeter	-0.7	-1.0	0	0	0.9	2.2	0	0	2.2
IC702	C. Tester	2.2	3.2	2.2	3.2	2.2	3.2	0	0	1.8
	E. Voltmeter	2.2	3.5	2.2	3.5	2.2	3.5	0	0.3	1.7
IC801	C. Tester	0	0	0	-5	0	0	0	4.8	
	E. Voltmeter	0	0	0	-5	0	0	0	4.8	
IC802	C. Tester	-3.8	4.4	0	-4.9	0	-3.7	4.1	4.8	
	E. Voltmeter	-3.8	4.8	0	-4.9	0	-3.7	4.3	4.8	
IC804	C. Tester	4.8	0	0	0	0	0	-5	0	5
	E. Voltmeter	4.8	0	0	0	0	0	-5	0	5
IC803	C. Tester	4.2	-0.3	0	-5.0	4.8	4.8	4.2	4.8	
	E. Voltmeter	4.3	-0.3	0	-5.0	4.8	4.8	4.3	4.8	

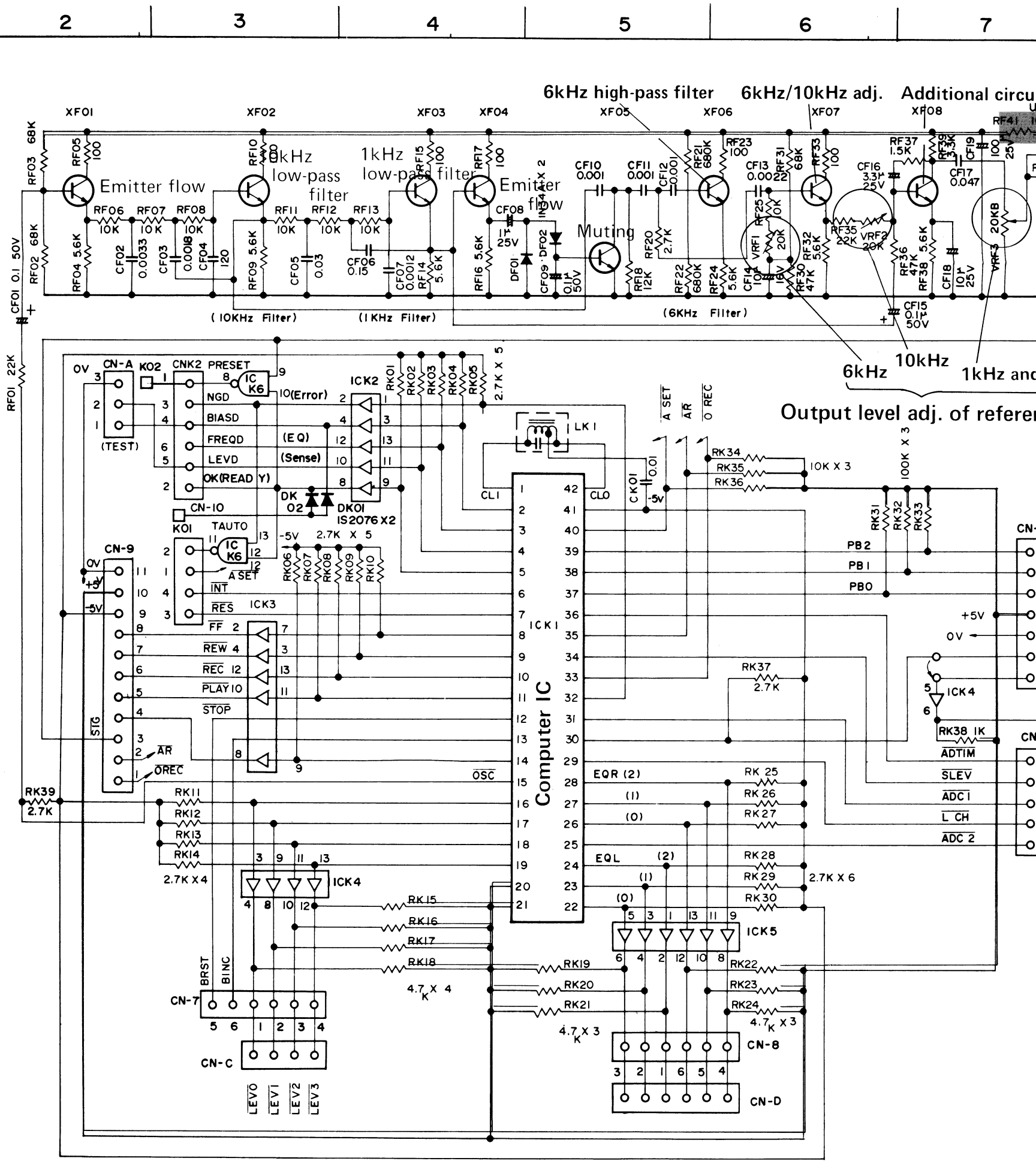


		15	16														
		0	4.7														
		0	4.8														
		0	4.8														
		0	4.8														
		0	4.8														
		0	4.8														
		0	4.7														
		0	4.8														
		0	4.7														
		0	4.8														

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC603	C. Tester	0	0	0	0	-4.1	-4.1	-5.1	0	0	0	0	-4.1	4.8	4.8		
	E. Voltmeter	0	0	0	0	-5.0	-5.0	-5.0	0	0	0	0	-5.0	4.8	4.8		
IC604	C. Tester	0	0	1.1	0	0	0	-5.1	0	0	5.1	5.1	0	0	0	0	4.8
	E. Voltmeter	0	0	1.1	0	0	0	-5	0	0	5.1	5.1	1.1	0	0	0	4.8
IC701	C. Tester	-0.6	-1.0	0	0	0.9	1.1	0	0	1.1	0	1.1	1.1	0	4.8		
	E. Voltmeter	-0.7	-1.0	0	0	0.9	2.2	0	0	2.2	0	2.2	2.2	0	4.8		
IC702	C. Tester	2.2	3.2	2.2	3.2	2.2	3.2	0	0	1.8	3.2	2.2	1.3	0.9	4.8		
	E. Voltmeter	2.2	3.5	2.2	3.5	2.2	3.5	0	0.3	1.7	3.5	2.2	1.3	0.9	4.8		
IC801	C. Tester	0	0	0	-5	0	0	0	4.8								
	E. Voltmeter	0	0	0	-5	0	0	0	4.8								
IC802	C. Tester	-3.8	4.4	0	-4.9	0	-3.7	4.1	4.8								
	E. Voltmeter	-3.8	4.8	0	-4.9	0	-3.7	4.3	4.8								
IC804	C. Tester	4.8	0	0	0	0	0	-5	0	5	5	5	-3.7	4.6	4.8	4.8	4.8
	E. Voltmeter	4.8	0	0	0	0	0	-5	0	5	5	5	-3.8	4.8	4.8	4.8	4.8
IC803	C. Tester	4.2	-0.3	0	-5.0	4.8	4.8	4.2	4.8								
	E. Voltmeter	4.3	-0.3	0	-5.0	4.8	4.8	4.3	4.8								

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X501	0	4.8	0	0	4.8	0
X502,602	0	0	0	0	0	0
X504,604	1.2	6	0.7	1.1	10.5	1.8
X701	6.7	3.1	6.2	6.7	3.1	6.3
X702	6.7	3.1	6.2	6.7	3.1	6.3
X703	6.8	3.1	6.2	6.8	3.1	6.3
X704	6.7	3.1	6.2	6.7	3.1	6.3
X705	6.7	3.1	6.2	6.7	3.1	6.3
X706	0	0.1	0.7	0	0	0.7
X707	0	0.1	0.8	0	0	0.8
X708	0.1	23.5	0.1	0.1	23.3	0
X709	0	0	0	0	0	0
X710	0	0	0	0	0	0
X711	0	24	-5.0	0	24	-5.0
X712	7.2	7.2	7.3	7.2	7.2	7.3

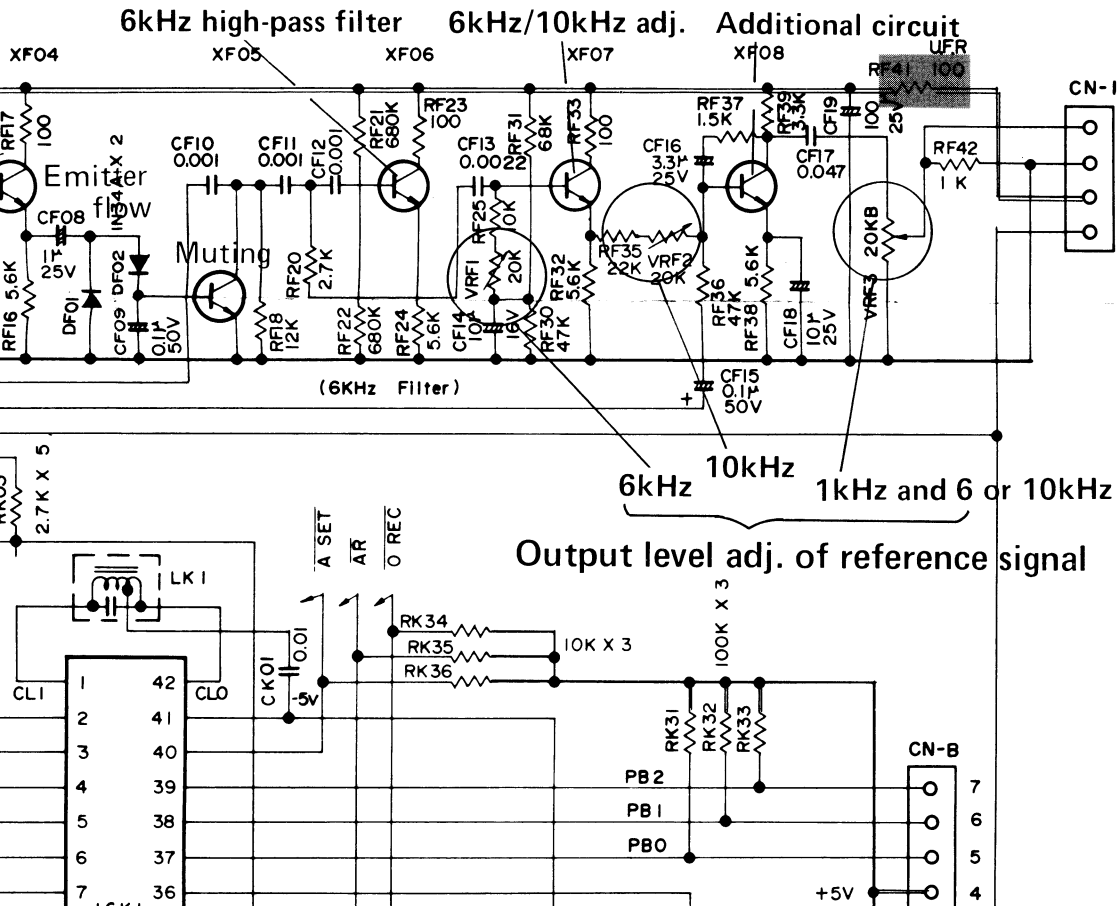
Computer Circuit



		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
ICK1	C. Tester	2.6	4.2	4.2	4.2	4.2	3.7	4.8	4.3	4.3	4.3	4.3	-1.0	-0.7	4.3	4.3	4.4	4.4	4.4	-0.7	5.1	5.1
	E. Voltmeter	2.6	4.2	4.2	4.2	4.2	3.6	5.0	4.2	4.2	4.2	4.2	-1.0	-0.7	4.2	4.2	4.4	4.4	4.4	-0.7	5.2	5.2

		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	C. Tester	4.4	4.4	-0.7	5.1	4.4	4.4	-0.7	5.1	4.4	5.1	4.4	PLAY 0.1 REC 4.7	4.2	4.9	4.2	3.5	3.5	3.5	5.0	-5	2.6
	E. Voltmeter	4.4	4.4	-0.7	5.0	4.4	4.4	-0.7	5.0	4.3	5.0	4.2	PLAY 0.2 REC 4.8	4.2	4.9	4.2	5.0	5.0	5.0	5.1	-5.0	2.6

		1	2	3	4	5	6	7
ICK2	C. Tester	4.3	3.2	4.2	3.2	0	0	0
	E. Voltmeter	4.3	3.2	4.2	3.3	0	0	0
ICK3	C. Tester	4.2	4.6	4.3	4.6	0	0	0
	E. Voltmeter	4.2	4.7	4.3	4.7	0	0	0
ICK4	C. Tester	1.7	0.2	4.4	5.1	4.4	5.0	0
	E. Voltmeter	1.7	0.2	4.4	5.1	4.4	5.0	0
ICK5	C. Tester	-0.6	0.2	4.4	5.1	4.4	5.1	0
	E. Voltmeter	-0.7	0.2	4.4	5.1	4.4	5.1	0
ICK6	C. Tester	0	0	4.0	0	0	4.0	0
	E. Voltmeter	0	0	4.2	0	0	4.2	0



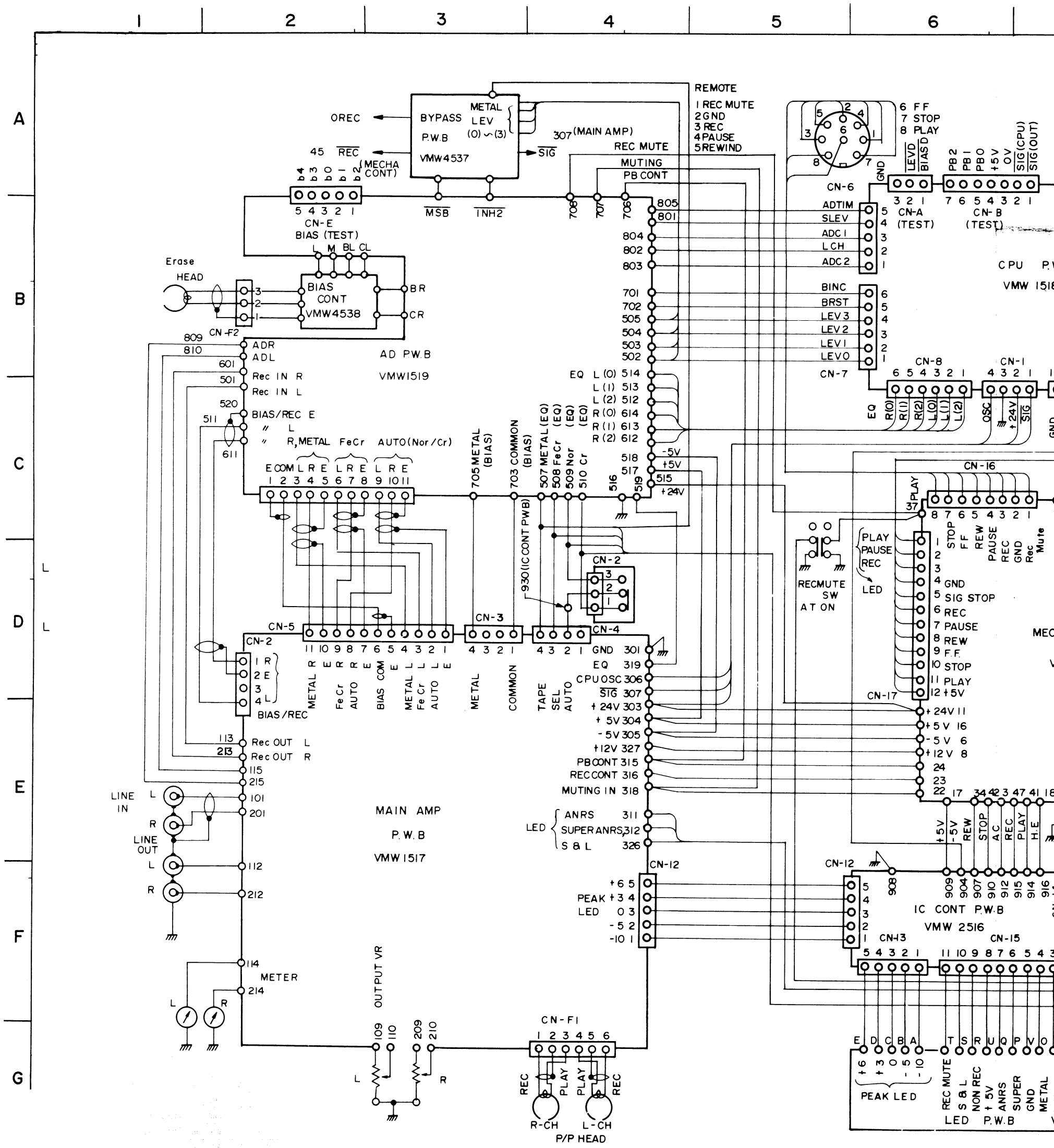
XF01 ~ XF08	2SC1685 (R,S)
ICK1	UPD546C-45
ICK2~5	HD7407
ICK6	HD7400

15	16	17	18	19	20	21
4.3	4.4	4.4	4.4	-0.7	5.1	5.1
4.2	4.4	4.4	4.4	-0.7	5.2	5.2
36	**37**	**38**	**39**	**40**	**41**	**42**
4.2	3.5	3.5	3.5	5.0	-5	2.6
4.2	5.0	5.0	5.0	5.1	-5.0	2.6

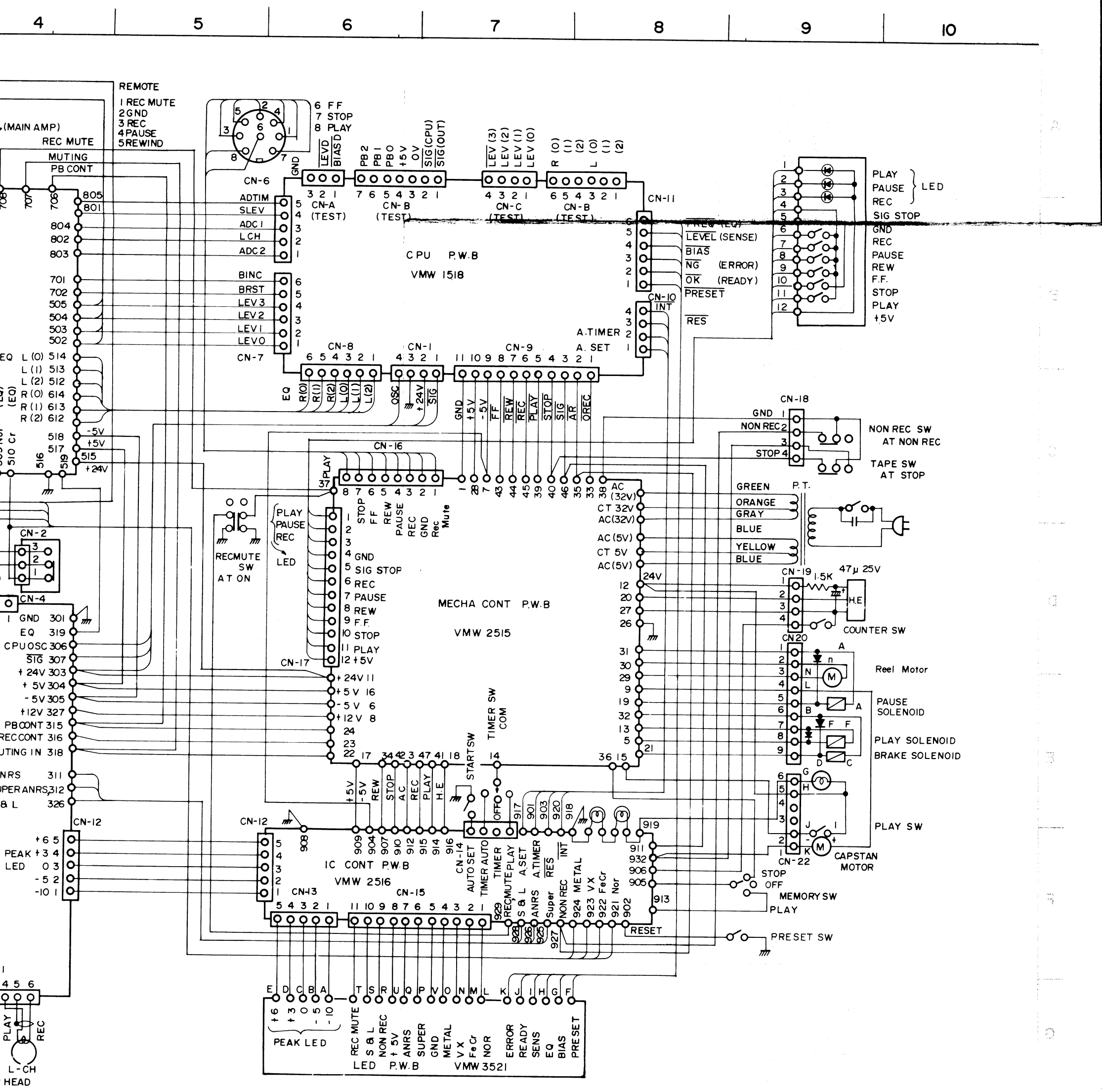
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
ICK2	C. Tester	4.3	3.2	4.2	3.2	0	0	0	3.2	4.3	3.2	4.2	3.2	4.2	5.1
	E. Voltmeter	4.3	3.2	4.2	3.3	0	0	0	3.2	4.2	3.3	4.2	3.3	4.2	5.1
ICK3	C. Tester	4.2	4.6	4.3	4.6	0	0	0	4.6	4.3	4.5	4.3	4.6	4.3	5.1
	E. Voltmeter	4.2	4.7	4.3	4.7	0	0	0	4.7	4.3	4.7	4.3	4.7	4.3	5.1
ICK4	C. Tester	1.7	0.2	4.4	5.1	4.4	5.0	0	5.0	4.3	5.0	4.4	0.1	-0.6	5.1
	E. Voltmeter	1.7	0.2	4.4	5.1	4.4	5.0	0	5.0	4.3	5.1	4.4	0.1	-0.7	5.1
ICK5	C. Tester	-0.6	0.2	4.4	5.1	4.4	5.1	0	0.1	-0.6	5.1	4.4	5.1	4.4	5.1
	E. Voltmeter	-0.7	0.2	4.4	5.1	4.4	5.1	0	0.1	-0.7	5.1	4.4	5.1	4.4	5.1
ICK6	C. Tester	0	0	4.0	0	0	4.0	0	0.2	4.9	3.2	0.2	3.2	3.2	5.1
	E. Voltmeter	0	0	4.2	0	0	4.2	0	0.2	4.9	3.2	0.2	3.2	3.2	5.2

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
XF01	11.0	23	11.5	10.5	22.5	11.1
XF02	10.1	23	10.5	9.8	22.5	10.5
XF03	9.2	23	9.8	9.0	22.5	9.6
XF04	8.9	23	9.5	8.4	22.5	9.0
XF05	0	0	0	0	0	0
XF06	9.5	23	8	9.0	22.5	9.5
XF07	9.0	23	9.0	8.5	22.5	9.0
XF08	8.0	18.5	8.5	7	18.2	8.3

Wiring Connections of Circuit (Schematic Constructions) of KD-A8



ematic Constructions) of KD-A8



Enclosure Ass'y and Electrical Parts List (Except P.W Board Parts)

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

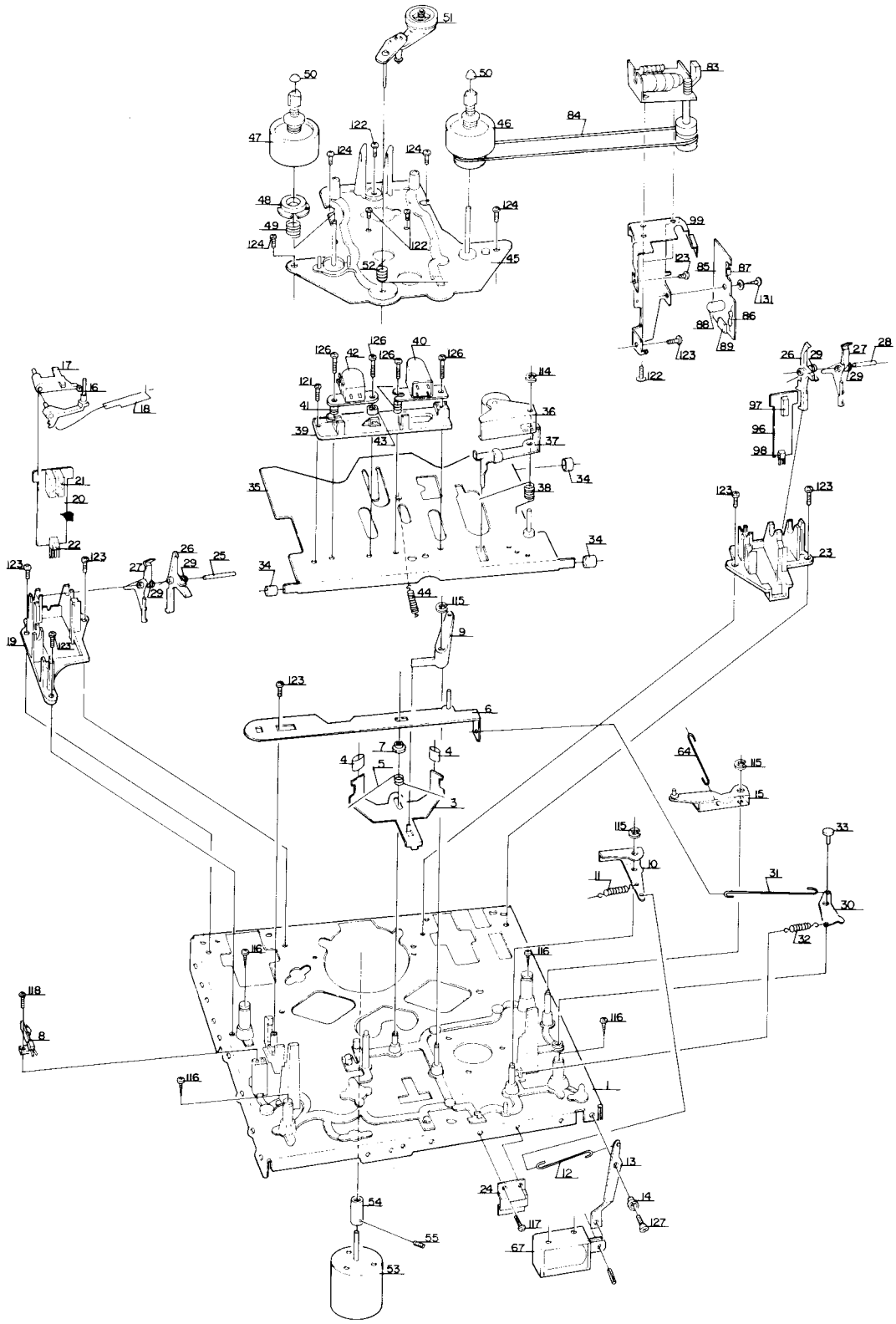
Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1~5	ZCKDA8Y-CBF-1	Front Plate Ass'y		1 set
1	VJC1065-003	Front Plate		1
2	VJD4261-003	Eject Escutcheon		1
3	VJD4262-003	Power Escutcheon		1
4	VJK4106-001	Counter Lens		1
5	VJD2133-001	Indicator Panel		1
7	T46392-009	Illumination Shield	for Rear Panel	2
8	VKS4149-003	Door Arm (L)		1
9	VKL4571-001	Door Bracket (L)		1
10	VKH4206-002	Door Shaft		1
11	VKS4150-003	Door Arm (R)		1
12	VKL4572-001	Door Bracket (R)		1
13	VKH4206-002	Door Shaft		1
14	RDS2400	C.S. Ring		1
15	VJD3163-003	Door		1
16	VJD3172-004	Control Panel		1
17	VJD3169-002	Panel Escutcheon		1
18	VXP4023-002	Push Button		6
19	VKW3001-019	Compression Spring		6
21~26	ZCKDA8Y-CBF-2	Indicator Ass'y		1 set
21	VJD3162-001	Indicator Plate		1
22	VJD3164-001	Indicator Lens		1
23	VJD3164-007	〃		1
24	T43595-009	Double Face		3
25	VJD4263-005	Escutcheon	for Set & Reset	1
26	VJD4263-006	〃	for R. Mute & Eject	2
27	VGM0410-001	Lever Meter		2
28	VXP3027-00A	Power Knob Ass'y		1
29	VKS4113-002	Remote Bar	for Power Switch	1
30	E48981-001	Stopper Pin	for Remote Bar	1
31	VXP4031-00A	Eject Knob Ass'y	for Cassette door	1
32	VKH4167-001	Collar		1
33	VKW3001-031	Compression Spring		1
34	VXS4019-001	Knob	for Memory & Timer	2
35	VXP4014-00A	Knob Ass'y	for Set, Reset and Mute	3
36	VXP4033-00A	Eject Knob Ass'y		1
37	VKW3001-031	Compression Spring	for Indicator panel	1
38	VXQ4018-003	Lever Knob		3
39	VXL4063-002	Volume Knob		3
40	VJD2134-002	Switch Panel		1
41	VJT3033-002	Switch Plate		1
42	TFB313563-01	Plate Nut		2
43	VKL3188-00B	Holder Plate Ass'y		1
44	VKL4213-002	Panel Plate		1
45	VJD4273-001	Indicator		1
47	VKZ4120-001	Sheet		1
48	VKL4507-001	Lamp Bracket		1
49	T47861-001	Pilot Lamp		2
50	*VKL4496-001	Governer Bracket		1
51	VKL4380-00A	Cross Bar Ass'y		2
52	VYSH103-023	Spacer	for Front panel, Rear panel	5
53	VYSH106-030	〃	for Amp chassis	1
54	VKL4246-001	Bracket	for Top cover	1
56	VKL4522-001	Joint Bracket	for Mecha + Front Bracket	2
57	VKL4169-00A	Gear Frame Ass'y		1
58	VKS4108-003	Spur Gear		1
59	VKS4109-004	Brake Drum		1

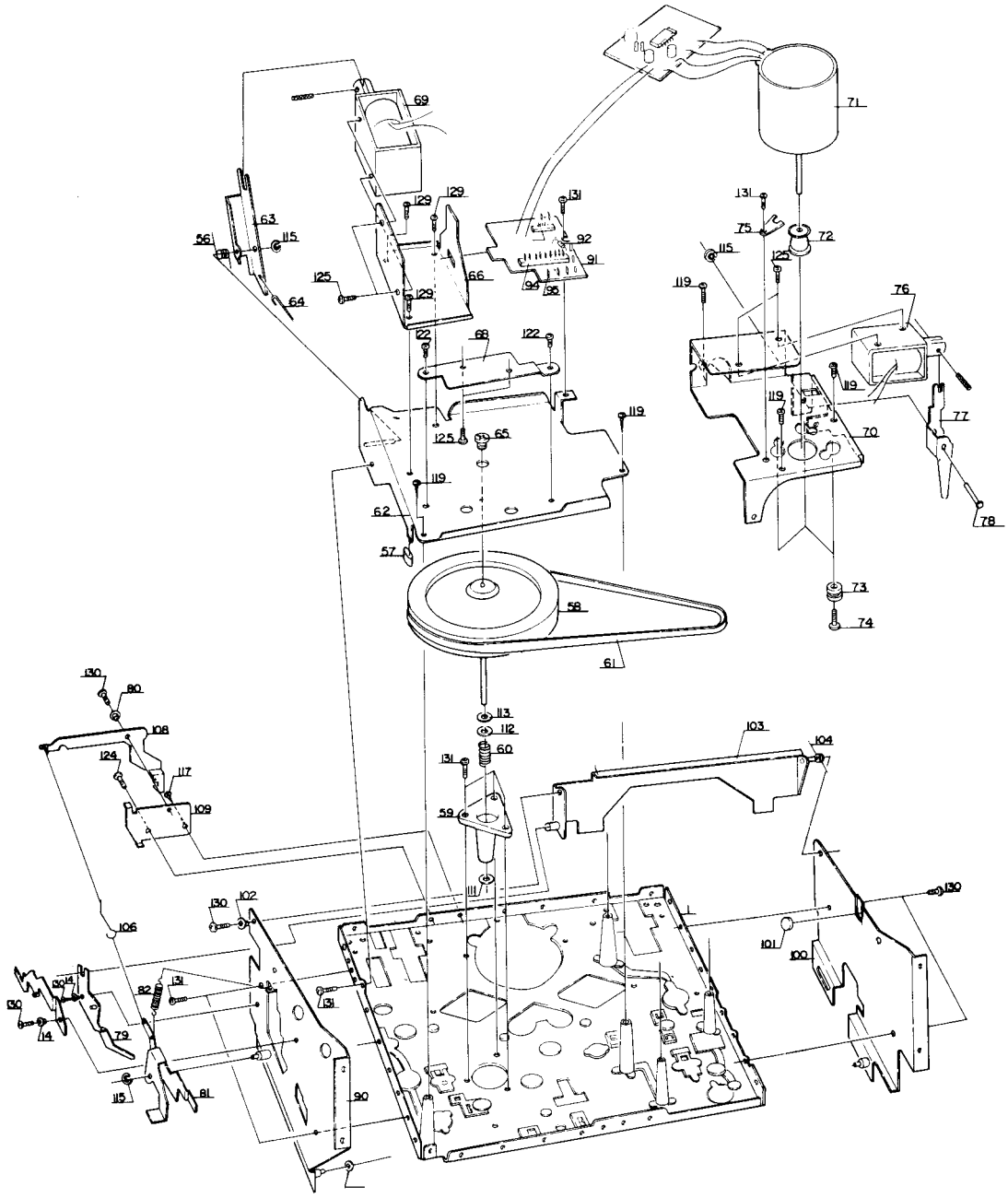
Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
60	VKW3001-006	Spring		1
61	VKS4110-002	Brake Arm		1
62	VKZ4111-001	Rubber Tire		1
63	VKL4271-001	Rubber Retainer		1
64	VKW4106-001	Torsion Spring		1
65	VKS3102-001	Rack Plate		1
66	VKH4123-001	Collar		1
67	VKL4396-001	Dumper Bracket		1
68	VKL4490-00A	Arm Bracket Ass'y		1
69	LDSP2604R	Screw	Cassette Door Arm	1
70	VJT2024-002	Cassette Lid		1
71	VKY4156-001	Cassette Spring (1)		2
72	VKY4159-001	" (2)		1
73	VKW4153-002	Holder Spring (R)	for Cassette lid	1
74	VKW4153-003	" (L)		1
75	VJD4226-001	Head Mark		1
76~78	ZCKDA8Y-CCA	Cassette Lid Ass'y		1 set
76	VJT3031-001	Cassette Door		1
77	VJT3032-002	Door Plate		1
78	VJZ4008-001	Double Face		1
79	VKL4447-001	Lock Bracket		1
80	VKL4448-00A	Lock Arm Ass'y		1
81	VKW4148-001	Torsion Spring		1
82	VKL1132-002	Top Cover		1
83	VKZ3001-002	Special Screw	for Top cover	6
84	VKL1133-003	Bottom Cover		1
85	VYN2042-003GA	Name Plate	KD-A8A	1
	" -002GA	"	KD-A8B	1
	" -004GA	"	KD-A8C	1
	" -005GA	"	KD-A8E	1
	" -006GA	"	KD-A8J	1
	" -007GA	"	KD-A8U	1
86	E48729-002	Plastic Rivet	for Name plate	2
87	VJF4001-001	Foot	(felt = VJF4002-001)	4
88	VKZ4113-002	Screw	Lever SW ~ Front bracket	6
89	QMF51A2-R50BS	Fuse	200mAT, KD-A8B ⚠	1
90	TAZ000509-08	Fuse Seal	200mAT, KD-A8B	1
91	QMG1321-002BS	Fuse Holder Ass'y	KD-A8B	1
101	VKL1126-002	AMP Chassis		1
102	VKL4435-001	Power Bracket	for Power switch	1
103	QSP2111-011	Push Switch	for Power switch KD-A8A/E ⚠	1
	" -011BS	"	" KD-A8B ⚠	1
	QSP1110-222	"	" KD-A8C/J ⚠	1
	" -221	"	" KD-A8U ⚠	1
104	QFA72BM-223	M.M. Capacitor	KD-A8C 0.022μF ⚠	1
	QFH72BM-223	"	KD-A8J 0.022μF ⚠	1
	QFH53AM-223	"	KD-A8U 0.022μF ⚠	1
105	T47047-001	Condenser Cap	KD-A8J/U ⚠	1
106	VKZ4001-011	Wire Holder		8
107	VTP66C7-011K	Power Transformer	KD-A8A/E ⚠	1
	VTP66C7-011KBS	"	KD-A8B ⚠	1
	VTP66A7-011K	"	KD-A8C/J ⚠	1
	VTP66U7-011K	"	KD-A8U ⚠	1
108	F4932-002	Special Washer	for Power Transformer	2
109	TAW000504-01	Connector	KD-A8C/J	2
110	VKL1127-00C	Front Bracket Ass'y		1
111	VKL4434-001	Switch Holder	for Memory SW	1
112	QSS2301-101	Slide Switch	Memory SW, Timer SW	2
113	QSP0229-011	Push Switch	Set — Reset	1
114	VKH3001-007	Flange Collar		4

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
115	QSP0219-015	Push Switch	Rec Muting	1
116	E46651-001	Wrapping Terminal		1
117	51739-2	Lug		1
118	VKS3000-001	P.W.B. Holder		4
119	VKL4436-001	P.W.B. Bracket		7
120	VKL1134-002	Shield Bracket		1
121	VKL3179-001	Bracket	for I.C. Control	1
122	VJD3165-001	Lamp Hood	for Meter	1
123	VYH4315-001	Bushing	for Lamp	2
124	T47861-003S	Lamp		2
125	*VKL1122-007	Rear Bracket	KD-A8A/B/E/U	1
	VKL1122-005	"	KD-A8C/J	1
126	QMP2560-244	Power Cord with Plug	KD-A8A	1
	QMP9017-008BS	Power Cord	KD-A8B	1
	QMP1200-200	Power Cord with Plug	KD-A8C/J	1
	QMP3900-244	"	KD-A8E	1
	QMP7600-183	"	KD-A8U	1
127	QHS3876-162	Strain Relief	KD-A8A/C/J/E/U	1
	QHS3876-162BS	"	KD-A8B	1
128	TAJ331301-03	Pin Jack Ass'y		1
129	TAA345532-01	Circuit Board		1
130	QMC0888-008	8P Din Socket	for Remote	1
131	QVD2A2A-024V	V. Resistor	Output level control 20kΩ	1
132	VMW4514-001	P.W. Board	for X19,21,22	3
133	*VKL4264-002	Radiation Plate	"	3
134	2SC1162WT(B,C)	Si. Transistor	X19, 21, 22	3
135	QRD143K-563	C. Resistor	R126,226, 56kΩ	2
136	QML3030-033	Lug Stop Ass'y		1
137	*VKL3143-001	Bracket	for Bias control P.W.B.	1
138	QSS2325-011	Slide Switch	Power selector KD-A8A/E	1
	QSS2325-011BS	"	" KD-A8B	1
	QSR0084-001	Voltage Select Switch	" KD-A8U	1
139	VKL4275-001	Bracket	for Voltage select SW, KD-A8U	1
141	NNS3000ZS	Nut	Door arm (L) x 1	4
			Door arm (R) x 1	
			Pin jack ass'y x 2	
142	Q030393-524	Washer	Brake arm	1
144	WNS2600Z	"	Brake drum	1
145	VNS3000N	"	Foot	4
146	WLS3000	Lock Washer	Door arm (L) x 1	2
			Door arm (R) x 1	
147	REE2000	"E" Ring	Brake drum x 1, Brake arm x 1	4
			Rack plate x 1, Arm bracket x 1	
148	REE2500	"	Holder plate x 2, Cross bar x 2	4
149	REE3000	"	Lock bracket	1
150	LPSP2604Z	Screw	Joint bracket x 1	5
			Memory switch x 2	
			Timer switch~Front bracket x2	
151	SDSP3006RS	"	Slide switch x 2 (KD-A8 A/B/E/U)	2
152	LPSP2608Z	"	Panel escutcheon x 3	4
			Lock plate x 1	
153	LPSP3006ZS	"	Mecha~Amp chassis x 4	12
			Dump bracket~ Gear dump x 2	
			Power switch x 2	
			Push switch (set-reset) x 2	
			Push switch (REC Mute) x 2	
			Voltage select SW x 2 (KD-A8U)	
154	SBSB2606Z	Tapping Screw	Panel escutcheon P.W.B. x 3	5
			Lamp bracket x 2	

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
155	SBSB3006Z	Tapping Screw	Dumper bracket ~ Amp chassis x 2 Lock bracket ~ Front bracket x 2 Power bracket ~ Chassis x 2 Wire holder x 6 Front bracket ~ Chassis x 4 Front bracket ~ Chassis x 3 Memory swtich ~ Front bracket x 4 Lapping terminal x 1, Lug x 1 P.W.B. bracket x 7 Slide bracket ~ Chassis x 6 IC control bracket x 3 Rear bracket x 4 Radiation plate x 2 Fuse Holder x 1	48
156	SBSB3006V	〃	P.W. Board	12
157	SBSB3008Z	〃	Lamp hood (Meter)	3
158	SBSB3014	〃	Foot	4
159	DPSP2610Z	Screw	Indicator plate ~ Indicator panel	6
160	DPSP3006VS	〃	P.W. Board	7
161	DPSP4008ZS	〃	Power Transformer	2
162	SDBP2604R	〃	Door ~ Door arm	4
163	SDSP2605RS	〃	8 pin DIN socket	2
164	SDSP3008RS	〃	Pin jack	2
165	SDSB3006R	〃	Rear Bracket	1
166	SDSB3008Z	〃	Front plate ~ Front bracket x 6 Bottom cover x 8	14
167	SDSB3010Z	〃	Switch panel x 2	2
168	SSSP2606Z	〃	Front plate x 2, Front plate x 2 Control panel x 2	6
169	DPSP3006CS	〃	Joint bracket	2
170	LPSP2606Z	〃	X19, 21 and 22 P.W.B.	3
171	LPSP3008ZS	〃	〃	3
172	DPSP3006Z	〃	Bracket	4
173	SDSP3006V	〃	P.W. Board	2
174	Q03095-206	Washer	Mecha con. P.W.B.	1

Mechanical Component Parts

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Mechanical Component Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1	VKL1118-00C	Chassis Base Ass'y		1
3	VKL4361-002	Brake Bar		1
4	T44341-001	Rubber Tire		2
5	*VKW4145-001	Brake Bar Spring	for Brake Bar	1
6	VKL4362-001	Lock Bar		1
7	VKZ4005-001	Stopper	for Brake Bar	1
8	VSH1102-001	Leaf Switch		1
9	VKS4135-00A	Lock Lever Ass'y		1
10	VKL4364-001	Pause Lever		1
11	VKW3002-004	Tension Spring	for Pause Lever	1
12	VKW4136-001	Connecting Wire		1
13	VKL4365-001	Pause Solenoid Lever		1
14	T43909-008	Metal		2
15	VKL4366-00A	Play Arm Ass'y		1
16	VKS4142-001	Push Arm (1)		1
17	VKS4143-001	Push Arm (2)		1
18	VKW4141-001	Push Arm Spring		1
19	VKS3109-001	Switch Holder (L)		1
20	VMW4522-001	P.W. Board (L)		1
21	QSP0029-001	Slide Switch		2
22	QMV5004-004	Connector		1
23	VKS3110-001	Switch Holder (R)		1
24	VKL4479-001	Flywheel Cover		1
25	VKH4196-001	Shaft		1
26	VKS4136-002	Switch Lever		2
27	*VKS4137-001	Pressure Lever		2
28	VKH4196-002	Shaft		1
29	VKW4138-001	Pressure Lever Spring		4
30	VKL4399-001	Eject Safety Lever		1
31	VKW4142-001	Connecting Wire		1
32	VKW3002-004	Spring		1
33	TEP357469-02	Stopper		1
34	VKZ3003-001	Rubber Tube		3
35	VKL4370-00C	Slide Base Ass'y		1
36	VKP4105-00A	Pinch Roller Bracket Ass'y		1
37	VKL4371-001	Push Arm		1
38	VKW4139-001	Pinch Roller Spring		1
39	VKS2102-001	Head Mount Base		1
40	ZMM089401-0E	REC/PB Head Ass'y		1
41	VKW3001-020	Compression Spring	for R/P and E Head	2
42	ZMM090414-0A	E. Head Ass'y		1
43	*VKH4215-001	Head Collar		1
44	VKW3002-005	Tension Spring	for Slide Base	1
45	VKL3155-00A	Reel Disk Bracket Ass'y		1
46	VKR4113-00A	Take-Up Reel Ass'y		1
47	VKR4118-00A	Supply Reel Ass'y		1
48	VKS4130-001	Back Tension Base		1
49	VKW3001-026	Compression Spring	for Back Tension	1
50	VKS4131-001	Reel Stopper		2
51	VKS4151-00B	Idler Ass'y Unit		1
52	VKW4134-001	Idler Spring		1
53	MDN-7V	Reel Motor		1
54	VKR4121-001	Motor Pulley		1
55	YRS2603B	Screw	for Motor Pulley	1
56	VKW4149-001	Play Solenoid Spring		1
57	VKZ3003-001	Rubber Tube		1
58	VKF3107-00C	Flywheel Ass'y		1
59	VKF3103-00B	Capstan Metal		1

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
60	T30301-137	Spring		1
61	*VKB3001-008	Capstan Belt		1
62	VKL4372-00B	Flywheel Holder Ass'y		1
63	VKL4368-002	Play Solenoid Lever		1
64	VKW4137-001	Connecting Wire		1
65	TEP357456-01	Thrust Screw		1
66	VKL4398-002	Play Solenoid Bracket		1
67	VGP0201-004	D.C. Solenoid Ass'y	Pause	1
68	VKL4478-002	Pause Solenoid Bracket		1
69	VGP0301-002	D.C. Solenoid Ass'y	Play	1
70	VKL3161-002	Motor Bracket		1
71	m1606-00A	D.C. Motor	Capstan	1
72	*VKS4139-001	Motor Pulley		1
73	TER357465-03	Cushion Rubber		3
74	VKZ4109-001	Motor Screw		3
75	TFB345469-01	Rubber Stopper		1
76	VGP0201-003	D.C. Solenoid Ass'y	for Brake	1
77	VKL4363-002	Lock Solenoid Lever		1
78	VKH4194-001	Shaft		1
79	*VKL4443-00A	Eject Lever Ass'y		1
80	VKH4202-001	Flange Collar		1
81	VKL4464-001	Lock Lever		1
82	VKW3000-030	Spring		1
83	VKC6107-001T	Counter Ass'y		1
84	*VKB3000-011	Counter Belt		1
85	VMW4528-002	P.W. Board		1
86	QRD121K-152	C. Resistor	1.5kΩ ¼W	1
87	VHE-6100	Hall Element		1
88	QEW41EA-107	E. Capacitor	100μF 25V	1
89	QMV5004-004	Connector		1
90	*VKL4492-00C	Mecha Bracket (R) Ass'y		1
91	VMW4523-001	P.W. Board		1
92	10E1-B	Si. Diode		3
93	QMV5005-006	Connector		1
94	QMV5005-009	Connector		1
95	FG9010-001	Tab		8
96	*VMW4534-001	P.W. Board		1
97	QSP0029-001	Slide Switch		1
98	QMV5004-003	Connector		1
99	*VKL4356-002	Counter Belt		1
100	VKL4461-00A	Mecha Bracket (L) Ass'y		1
101	VYSR201-003	Spacer		1
102	T43909-002	Metal		1
103	VKL4403-00D	Shift Arm Ass'y		1
104	VKW4156-001	Shift Arm Spring		1
105	TJN265559-04	Silencer		1
106	*VKW4161-002	Wire		1
107	*VKL4524-003	Lock Arm		1
108	*VKL4525-003	Lock Lever		1
109	*VKL4523-001	Lock Lever Bracket		1
110	WSS300N	Washer	Cross bar	1
111	Q03093-522	〃	Flywheel	1
112	〃 -621	〃	〃	1
113	〃 -827	〃	〃	1
114	REE2000	"E" ring	Push arm	1
115	REE2500	〃	Lock lever ass'y x 1 Pause lever x 1, Play arm x 1 Play solenoid lever x 1 Shaft x 1, Lock lever x 1	6
116	GPSA2612Z	Tapping Screw	Slide base	4

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
117	SBSB2606Z	Tapping screw	Flywheel cover x 2 Lock lever bracket x 1	3
118	SBSB2608Z	"	Leaf switch	1
119	SBSB2610Z	"	Flywheel holder x 2 Motor bracket x 2	4
121	SPSP2006N	Screw	Head mount base	1
122	LPSP2604Z	"	Reel motor	3
123	SPSP2605Z	"	Switch holder	5
124	SPSP2606Z	"	Reel ass'y unit x 4 Lock lever bracket x 1	5
125	SPSP3003ZS	"	Solenoid (play) x 2 Solenoid (brake) x 2 Solenoid (pause) x 2	6
126	SPSX2010N	"	REC/PB Head x 2, E.Head x 2	4
127	LPSP2605Z	"	Pause solenoid lever	1
128	SSSP3006ZS	"	Counter x 2 Eject lever ass'y x 1	3
129	LPSP2604Z	"	Play solenoid bracket	5
130	LPSP2605Z	"	Counter bracket x 6 Lock lever x 1	11
131	LPSP2606Z	"	Mecha bracket (R) x 1 Mecha bracket (L) x 3 Capstan metal x 3 Rubber stopper x 1 Flywheel holder x 1 Motor bracket x 1 Hall element P.W. board x 1	7

Printed Wiring Board Parts

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

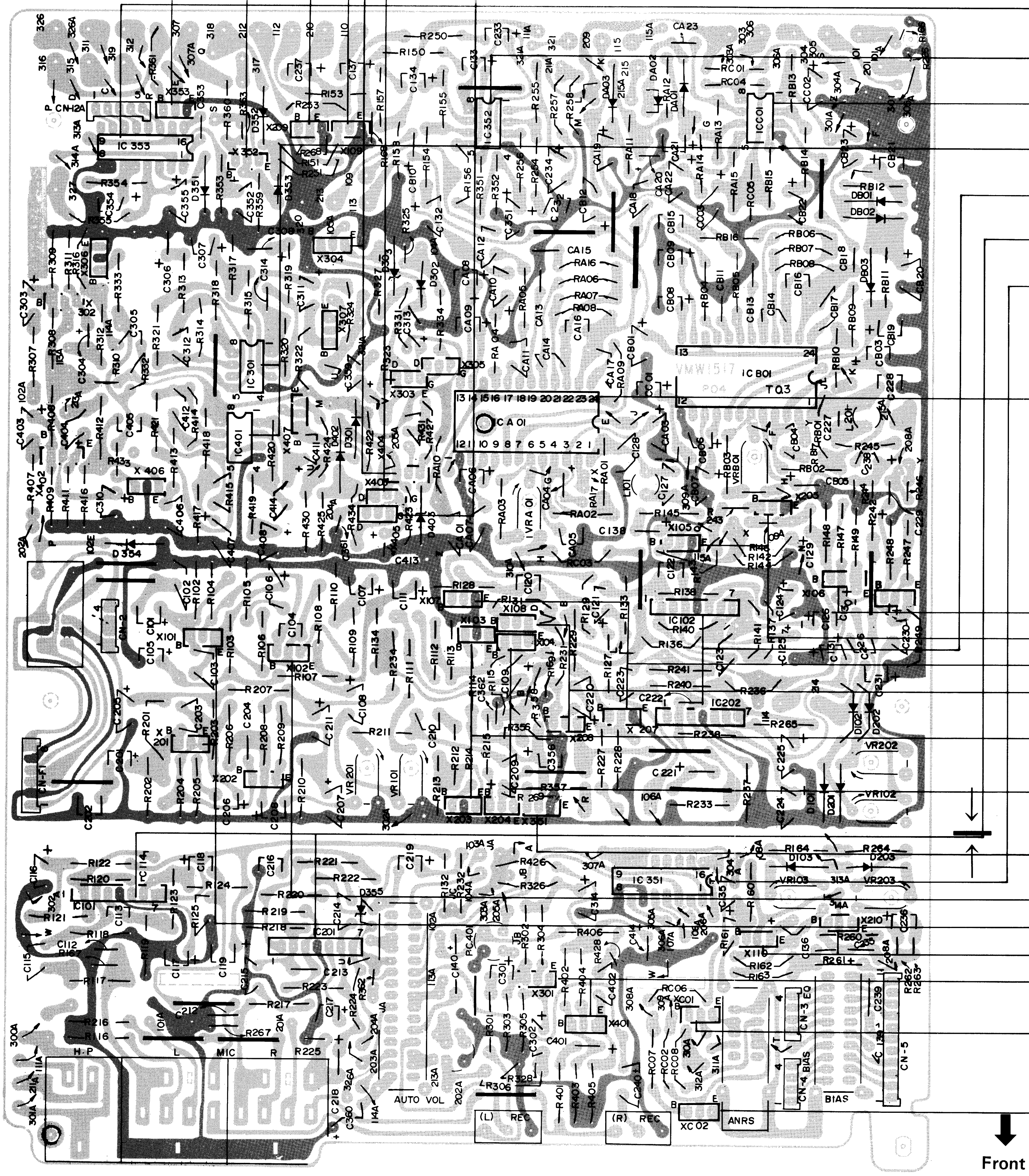
Main Amp P.W. Board Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	VMW1517-003	P.W. Board	No supply as parts ass'y	1
R101,201	QRZ0019-184	C. Resistor (Low noise)	180kΩ ¼W	2
R102,202	" -104	"	100kΩ "	2
R103,203,156,256, 160,260,169,269	QRD141K-224	C. Resistor	220kΩ "	8
R104,204	QRZ0019-473	C. Resistor (Low noise)	47kΩ "	2
R105,205,157,257	QRD141K-151	C. Resistor	150Ω "	4
R106,206,125,225	" -154	"	150kΩ "	4
R107,207,133,233 147,247,315,415 A09,B09	" -104	"	100kΩ "	10
R108,208,129,229	" -153	"	15kΩ "	4
R109,209,117,217 A16,B16	" -680	"	68Ω "	6
R110,210,116,216 142,242	" -182	"	1.8kΩ "	6
R111,211,128,228 164,264,168,268 A17,B17	" -273	"	27kΩ "	10
R112,212,A05,B05	" -391	"	390Ω "	4
R113,213,119,219 C08	" -271	"	270Ω "	5
R114,214,162,262 A11,B11,A14,B14 C07,154,254,361 322,422,333,433 332,357,311,411 312,412	" -103	"	10kΩ "	22
R115,215,131,231 161,261	" -394	"	390kΩ "	6
R118.218	QRZ0019-124	C. Resistor (Low noise)	120kΩ "	2
R120,220	" -224	"	220kΩ "	2
R121,221	" -154	"	150kΩ "	2
R122,222,334,434	QRD141K-274	"	270kΩ "	4
R123,223,163,263	" -123	"	12kΩ "	4
R124,224,143,243	" -562	"	5.6kΩ "	4
R127,227,305,405 324,424	" -102	"	1kΩ "	6
R132,232,136,236	QRD146K-271	Unflamable Resistor	270Ω " ⚠	4
R134,234	" -221	"	220Ω " ⚠	2
R137,237	QRD141K-221	C. Resistor	220Ω "	2
R138,238	" -224	"	220kΩ "	2
R140,240	" -184	"	180kΩ "	2
R141,241,A08,B08 166,266	" -183	"	18kΩ "	6
R144,244	" -333	"	33kΩ "	2
R145,245,149,249 153,253,319,419 330,331,431	" -332	"	3.3kΩ "	11
RA02,B02,C03,358	" -473	"	47kΩ "	8
306,406,A01,B01 RA03,B03	" -222	"	2.2kΩ "	2
RA04,B04,151,251 167,267	" -472	"	4.7kΩ "	6
RA06,B06,A07,B07 362	" -272	"	2.7kΩ "	5
RA10,B10	QRD146K-181	Unflamable Resistor	180Ω " ⚠	2

Main Amp. P.W. Board Parts

Voltage values are measured by th
C. Tester - Circuit Tester (20kΩ in
E. Voltmeter = Electronic Voltme

E. Voltmeter	0	1.0	0	1.9	0	2.0	0	0.12	0.75	0	23.5	0.6	0	0	0	0	0	0
C. Tester	0	1.0	0	4.7	0	4.9	0	0	0	0	0	0.3	0	0	0	0	0	0
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
	X353			X352			X109,209			X304,404			X303,403			X305,405		



IC353	C. Tester
	E. Voltmeter
IC352	C. Tester
	E. Voltmeter
ICC01	C. Tester
	E. Voltmeter
IC301 401	C. Tester
	E. Voltmeter
IC102 202	C. Tester
	E. Voltmeter
IC101 201	C. Tester
	E. Voltmeter
IC351	C. Tester
	E. Voltmeter

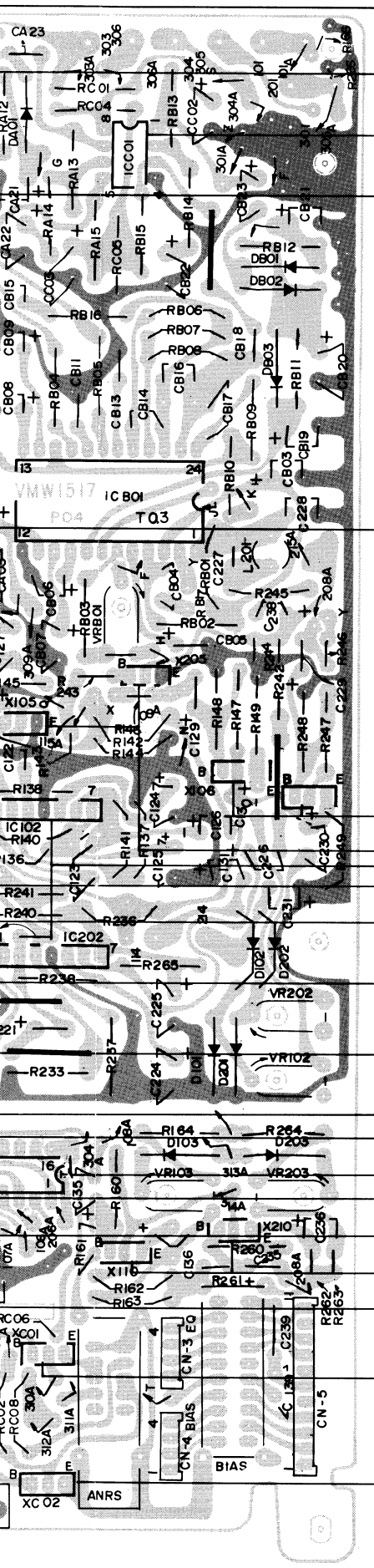
ICA01 B01	C. Tester
	E. Voltmeter

	C. Tester
	E. Voltmeter

	C. T	
	E	C
X106,206	8.4	23.5
X105,205	0	0
X107,207	0	0
X108,208	1.56	0
103,203	0	0
X104,204	1.55	1.55
	0.76	0
X351	0.68	0
	0	2.75
X102,202	1.86	7.8
X101,201	0.1	1.95
X110,210	12.7	23
X301,401	12	17
XC01	0	0.03
	4.4	5.3
XC02	0	0
	0	0

	0	0
	0	0
	C	B
305,405		

Voltage values are measured by the following meter without input signal
C. Tester - Circuit Tester (20kΩ impedance)
E. Voltmeter = Electronic Voltmeter



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IC353	C. Tester	0.64	0	0	10.7	2.8	2.8	0	0	0	3.2	3.2	3.2	3.2	3.2	0	0.
	E. Voltmeter	0.7	0.3	0	11.8	2.9	2.9	0	0	0	3.5	3.5	3.5	3.5	3.5	0.1	0.3
IC352	C. Tester	11.7	11.7	5.1	0	5.1	11.7	11.7	23								
	E. Voltmeter	11.7	11.7	11.5	0	11.5	11.7	11.7	23.5								
ICC01	C. Tester	11	11.5	11.5	0	11.5	11.5	11.5	22.5								
	E. Voltmeter	11.5	11.5	11.5	0	11.5	11.5	11.5	22.7								
IC301 401	C. Tester	11.7	11.7	11.7	0	11.7	11.7	11.7	23.5								
	E. Voltmeter	11.7	11.7	11.7	0	11.7	11.7	11.7	23.5								
IC102 202	C. Tester	1.85	0.1	0.12	0.34	0.65	8.4	22.5									
	E. Voltmeter	2	0.7	0.1	0.4	0.7	8	22.7									
IC101 201	C. Tester	1.8	0.095	0.075	0	0.62	11	22									
	E. Voltmeter	1.95	0.68	0.15	0	0	10.6	22.2									
IC351	C. Tester	0	0	0	0	0	0	-5	0	4.8	4.8	4.8	0	0	0	0	4.75
	E. Voltmeter	0	0	0	0	0	0	-5	0	4.95	4.95	4.95	0	0	0	0	4.8

		1	2	3	4	5	6	7	8	9	10	11	12
ICA01 B01	C. Tester	7.4	7.5	8	6.5	5.8	5	1	4.2	7.4	7.4	0.35	0
	E. Voltmeter	8.4	7.7	7.4	8.4	6.0	5.2	1.1	4.4	7.7	7.7	0.5	0

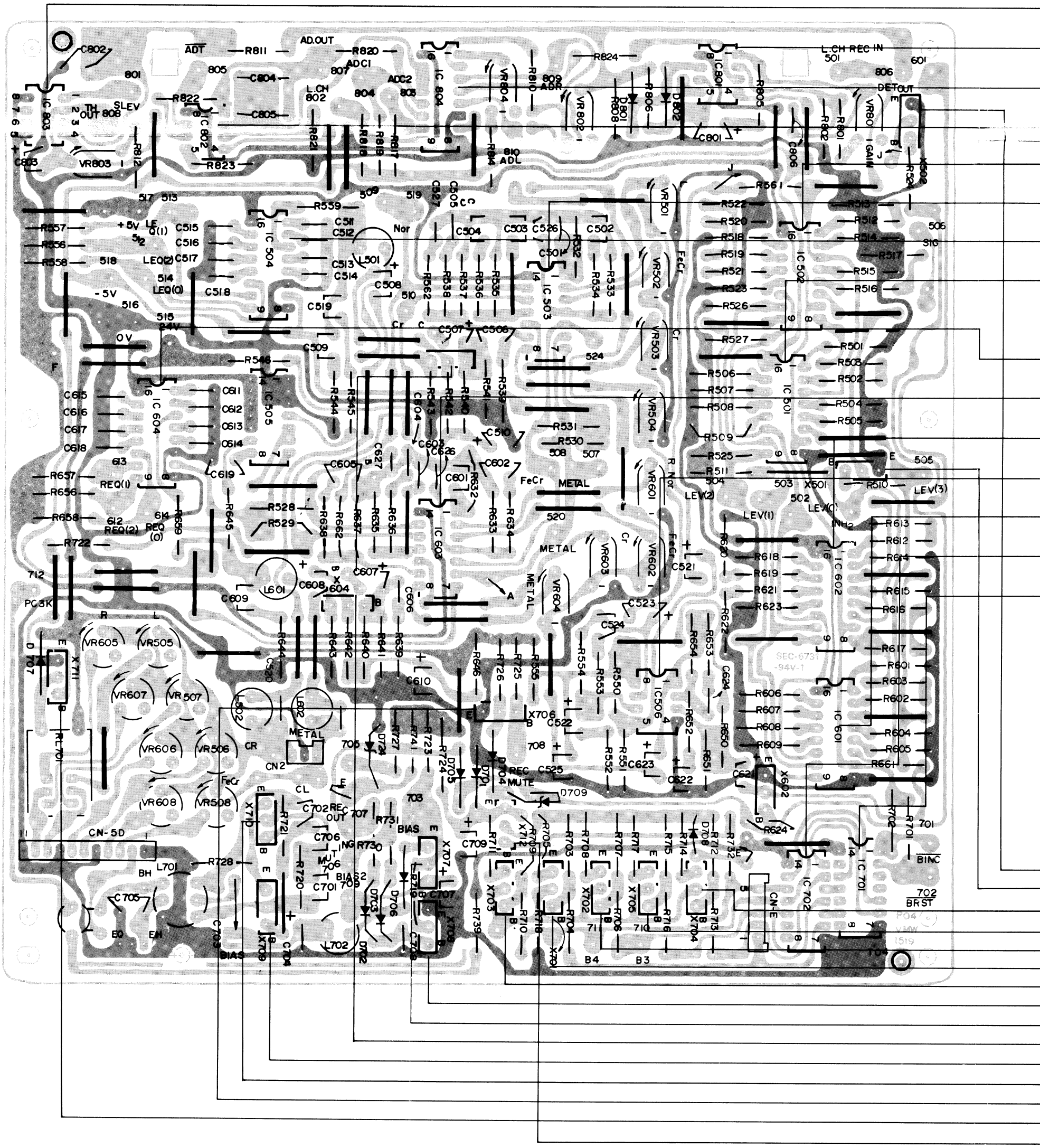
		13	14	15	16	17	18	19	20	21	22	23	24
	C. Tester	0.8	0.7	17	7.5	8.8	7.6	8.8	10	10	10	10	14.5
	E. Voltmeter	0.1	0.9	17.0	7.7	9.0	7.7	9.0	10.3	10.3	10.3	10.3	14.5

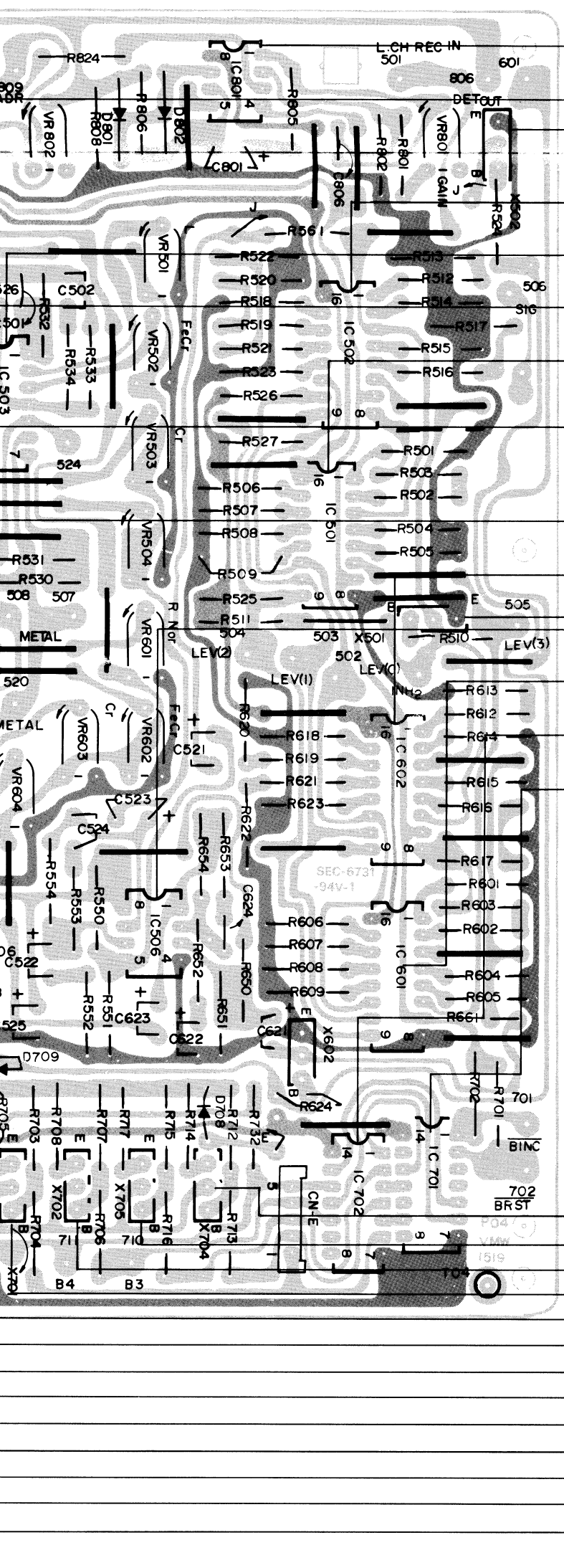
	C. Tester			E. Voltmeter			
	E	C	B	E	C	B	
X106,206	8.4	23.5	7.6	8.5	23.5	9.1	
X105,205	0	0	0	0	0	-0.6	
X107,207	0	0	0.72	0	0	0.7	
X108,208	1.56	0	0	4.1	2.5	0	
103,203	0	0	0 with chrome tape 0.65	0	0	0 with chrome tape 0.65	
X104,204	1.55	1.55	1.8	4.1	4.1	4.6	PLAY
	0.76	0	0	3.8	3.8	0	REC
X351	0.68	0	0	0	0	0.7	
	0	2.75	-5	0	2.4	-4	with chrome tape
X102,202	1.86	7.8	8.0	1.9	8.0	2.5	
X101,201	0.1	1.95	3.8	5.7	2.5	5.1	
X110,210	12.7	23	8.4	13.5	23.5	14	
X301,401	12	17	12	12.5	13.0	13.0	
XC01	0	0.03	0.65	0	0.03	0.66	Super ANRS ON
	4.4	5.3	4.8	4.4	5.3	4.8	Super ANRS OFF
XC02	0	0	0	1	1	0	Super ANRS ON
	0	0	0	0	0	0.01	Super ANRS OFF

at recording (0VU) and S & L level setting

	E. Voltmeter			C. Tester		
	D	G	S	D	G	S
X303,403	9.5	4.6	5	9.6	4.5	5.3
X305,405	4.6	5	4.6	4.5	5	4.5

Analog Digital P.W. Board Parts



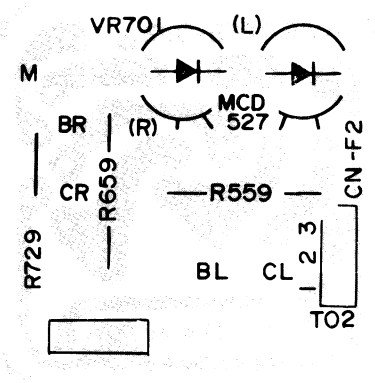


		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC803	C. Tester	4.2	-0.3	0	-5.0	4.8	4.8	4.2	4.8								
	E. Voltmeter	4.3	-0.3	0	-5.0	4.8	4.8	4.3	4.8								
IC801	C. Tester	0	0	0	-5	0	0	0	4.8								
	E. Voltmeter	0	0	0	-5	0	0	0	4.8								
IC804	C. Tester	4.8	0	0	0	0	0	-5	0	5	5	5	-3.7	4.6	4.8	4.8	4.8
	E. Voltmeter	4.8	0	0	0	0	0	-5	0	5	5	5	-3.8	4.8	4.8	4.8	4.8
IC802	C. Tester	-3.8	4.8	0	0	0	-3.7	-3.7	-3.7								
	E. Voltmeter	-3.8	4.8	0	0	0	-3.7	-4.3	4.8								
IC502	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.8
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC503	C. Tester	0	0	0	0	-4.1	-4.1	-5.1	0	0	0	0	-4.1	4.8	4.8		
	E. Voltmeter	0	0	0	0	-5.0	-5.0	-5.0	0	0	0	0	-5.0	4.8	4.8		
IC504	C. Tester	0	0	1.1	0	0	0	-5.1	0	0	5.1	5.1	0	0	0	0	4.8
	E. Voltmeter	0	0	1.1	0	0	0	-5	0	0	5.1	5.1	1.1	0	0	0	4.8
IC501	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.7
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC604	C. Tester	0	0	1.1	0	0	0	-5.1	0	0	5.1	5.1	0	0	0	0	4.8
	E. Voltmeter	0	0	1.1	0	0	0	-5	0	0	5.1	5.1	1.1	0	0	0	4.8
IC603	C. Tester	0	0	0	0	-4.1	-4.1	-5.1	0	0	0	0	-4.1	4.8	4.8		
	E. Voltmeter	0	0	0	0	-5.0	-5.0	-5.0	0	0	0	0	-5.0	4.8	4.8		
IC602	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.7
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC506	C. Tester	11.5	11.5	10.0	0	10.0	11.5	11.5	23								
	E. Voltmeter	11.5	11.5	11.4	0	11.3	11.5	11.5	23								
IC601	C. Tester	0	0	0	0	0	0	-5	0	5.0	5.0	5.0	0	0	0	0	4.7
	E. Voltmeter	0	0	0	0	0	0	-5.1	0	5.2	5.2	5.2	0	0	0	0	4.8
IC702	C. Tester	2.2	3.2	2.2	3.2	2.2	3.2	0	0	1.8	3.2	2.2	1.3	0.9	4.8		
	E. Voltmeter	2.2	3.5	2.2	3.5	2.2	3.5	0	0.3	1.7	3.5	2.2	1.3	0.9	4.8		
IC701	C. Tester	-0.6	-1.0	0	0	0.9	1.1	0	0	1.1	0	1.1	1.1	0	4.8		
	E. Voltmeter	-0.7	-1.0	0	0	0.9	2.2	0	0	2.2	0	2.2	2.2	0	4.8		

Front

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X502,602	0	0	0	0	0	0
X501	0	4.8	0	0	4.8	0
X704	6.7	3.1	6.2	6.7	3.1	6.3
X705	6.7	3.1	6.2	6.7	3.1	6.3
X702	6.7	3.1	6.2	6.7	3.1	6.3
X701	6.7	3.1	6.2	6.7	3.1	6.3
X703	6.8	3.1	6.2	6.8	3.1	6.3
X708	0.1	23.5	0.1	0.1	23.3	0
X707	0	0.1	0.8	0	0	0.8
X504,604	1.2	6	0.7	1.1	10.5	1.8
X709	0	0	0	0	0	0
X710	0	0	0	0	0	0
X706	0	0.1	0.7	0	0	0.7
X711	0	24	-5.0	0	24	-5.0
X712	7.2	7.2	7.3	7.2	7.2	7.3

Photocoupler P.W. Board Parts



Ref. No.	Parts No.	Parts Name	Remarks		Q'ty
RA12,B12,A15,B15 C04,C05,C06 301,401,325,425 155,255,158,258	QRD141K-223	C. Resistor	22kΩ	¼W	15
RA13,B13	" -684	"	680kΩ	"	2
RC01	QRD146K-221	Unflamable Resistor	220Ω	" ⚠	1
RC02	QRD142K-471	C. Resistor	470Ω	"	1
R146,246	QRD141K-472	"	4.7kΩ	"	2
R148,248,351,352	" -683	"	68kΩ	"	4
R150,250,304,404	" -101	"	100Ω	"	4
R353	" -153	"	15kΩ	"	1
R354	" -102	"	1kΩ	"	1
R355	QRD146K-151	Unflamable Resistor	150Ω	" ⚠	1
R356	QRD141K-104	C. Resistor	100kΩ	"	1
R360,363	QRD143K-152	"	1.5kΩ	"	2
R165,265,307,407	" -562	"	5.6kΩ	"	4
R302,402	QRD141K-124	"	120kΩ	"	2
R303,403	QRD142K-334	"	330kΩ	"	2
R308,408,309,409	" -105	"	1MΩ	"	4
R310	QRD141K-332	"	3.3kΩ	"	1
R313,413,321,421 328,428	" -392	"	3.9kΩ	"	6
R314,414	QRD142K-823	"	82kΩ	"	2
R316,416,317,417 318,418,320,420	QRD141K-563	"	56kΩ	"	8
R323,423	" -822	"	8.2kΩ	"	2
R326,426	QRD146K-102	Unflamable Resistor	1kΩ	"	2
R327,427	QRG019J-181	O.M.F. Resistor	180Ω	"	2
	QWY123-022	Bus Wire			21
C101,201	QEE51EM-475	T.S.E. Capacitor	4.7μF	25V	2
C102,202	QCS11HJ-221	F.C. Capacitor	220pF	50V	2
C103,203,122,222 113,213	" -271	"	270pF	"	6
C104,204	" -8R0	"	8pF	"	2
C105,205	QEB41EM-336M	E. Capacitor (Low Leak)	33μF	25V	2
C106,206	QEB41CM-107M	"	100μF	16V	2
C107,207,117,217	QEW41AA-107N	E. Capacitor	100μF	10V	4
C108,208,109,209 118,218,120,220	QEW41EA-335N	"	3.3μF	25V	8
C110,210	QFM41HJ-154	Mylar Capacitor	0.15μF	50V	2
C111,211,125,225	QEW41EA-107N	E. Capacitor	100μF	25V	4
C112,212	QCY41HK-681	F. Ceramic Capacitor	680pF	50V	2
C114,214	QCS11HJ-390	"	39pF	"	2
C115,215,121,221	QEB41EM-335N	E. Capacitor (Low Leak)	3.3μF	25V	4
C116,216	QEB41EM-106N	"	10μF	"	2
C119,219,C02	QEW41EA-476N	E. Capacitor	47μF	"	3
C123,223	QCS11HJ-390	F. Ceramic Capacitor	39pF	50V	2
C124,224,C01	QEW40JA-227N	E. Capacitor	220μF	6.3V	3
C126,226	QEB41HM-105M	"	1μF	50V	2
C127,227	QCS11HJ-201	F. Ceramic Capacitor	200pF	"	2
C128,228	QFM41HK-102	Mylar Capacitor	0.001μF	"	2
CA01,B01	QEW41EA-227N	E. Capacitor	220μF	25V	2
CA03,B03	QEB41EM-336N	E. Capacitor (Low Leak)	33μF	"	2
CA04,B04	QEW41HA-105N	E. Capacitor	1μF	50V	2
CA05,B05	QEW41CA-336N	"	33μF	16V	2
CA06,B06,A07,B07 135,235	QEW41EA-336N	"	33μF	25V	6
CA08,B08,A09,B09	QEW41AA-107N	"	100μF	10V	4
CA10,B10,130,230 301,401	QEW41EA-475N	"	4.7μF	25V	6

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
CA11,B11,A13,B13	QCS11HJ-151	F. Ceramic Capacitor	150pF 50V	4
CA12,B12,304,404 305,405,140,240	QEB41HM-105M	E. Capacitor (Low Leak)	1μF "	8
CA14,B14	QFM41HJ-272	Mylar Capacitor	0.0027μF "	2
CA15,B15	" -273	"	0.027μF "	2
CA16,B16	" -682	"	0.0068μF "	2
CA17,B17,A18,B18	QCS11HJ-471	F. Ceramic Capacitor	470pF "	4
CA19,B19,A22,B22	QEB41HM-334M	E. Capacitor (Low Leak)	0.33μF "	4
CA20,B20	QEB41EM-335N	"	3.3μF 25V	2
CA21,B21	QEW41AA-476N	E. Capacitor	47μF 10V	2
CA23,B23,354,311 411	QEW41HA-105N	"	1μF 50V	5
CC03,132,232,352 306,406,308,408	QEW41CA-336N	"	33μF 16V	8
C129,229,361	QEW41EA-335N	"	3.3μF 25V	3
C131,231	QEW41CA-106N	"	10μF 16V	2
C133,233	QEB41HM-104M	"	0.1μF 50V	2
C134,234,359	QEW41EA-336N	"	33μF 25V	3
C136,236	QEB41HM-474M	E. Capacitor (Low Leak)	0.47μF 50V	2
C351,302,402,307 407	QEW41EA-106N	E. Capacitor	10μF 25V	5
C353	QCS11HJ-470	F. Ceramic Capacitor	47pF 50V	1
C356	QEW41CA-476N	E. Capacitor	47μF 16V	1
C360	QEE41EM-105M	Dip Tantal Capacitor	1μF 25V	1
C303,403	QEB41HM-104M	E. Capacitor (Low Leak)	0.1μF 50V	2
C310,314,414	QEW41EA-107N	E. Capacitor	100μF 25V	3
C312,412,315,415	QCS11HK-680	F. Ceramic Capacitor	68pF 50V	4
C313,413	QFM41HJ-184M	Mylar Capacitor	0.18μF "	2
C137,237,138,238	QEB41HM-105M	E. Capacitor (Low Leak)	1μF "	4
C139,239	QFS42BK-471	Polystyrene Capacitor	470pF	2
C362	QFM41HK-102	Mylar Capacitor	0.001μF 50V	1
VR101,201,103,203	QVP8A0B-024M	V. Resistor	20kΩ	4
VR102,202	" -052M	"	500Ω	2
VRA01,B01	" -023M	"	2kΩ	2
L101,201	VQP0001-183	Inductor	18mH	2
X101,201	2SA721(T.U)	Si. Transistor		2
X102,202,301,401 302,402	2SC1327(T.U)	"		6
X103,203,104,204 351,105,205,C01	2SC1685(R.S)	"		18
C02,106,206,107 207,108,208,110 210,353				
X109,209,304,404	2SC1384(S)	"		4
X352	2SA564(R.S)	"		1
X305,405,303,403	2SK104F	F.E. Transistor		4
IC101,201,102,202	UPC1024HV	I.C.		4
IC352,301,401	UPC4557C	"		3
ICC01	UPC4558C	"		1
ICA01,B01	TAT000351-01	"		2
IC351	MSM4053	"		1
IC353	LB1415S	"		1
X306,406	2SC1685(R.S)	Si. Transistor		2
X307,407	2SA564(R.S)	"		2
D101,201,102,202	1N34A	Ge Diode		8
A01,B01,A02,B02				
D103,203	1S2075K-23	Si. Diode		2
DA03,B03	1S2076	"		2
D301	RD4.3E(C)	Zener Diode		1

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
D302,402	OA91	Ge Diode		2
D303,403	RD2.2E(B)	Zener Diode		2
D352~354	1S2076	Si. Diode		3
D351	1S2075K-23	"		1
D355	RD10E(I)	Zener Diode		1
	*MCD-527-V3	Photo Coupler		2
	T31547-002	Relay		1
	VMJ5002-005	Mic & H.P Jack Ass'y		1
	QSL6310-002	Lever Switch	(Auto Rec)	1
	QSL2310-101	"	(ANRS)	1
	QSL4310-013	"	(Tape selector)	1
	VKZ4113-002	Screw	(SW~Front Bracket)	6
	QVG4A2A-054V	V. Resistor	(Rec. volume)	2
CN-2,CN-3	QMV5005-004	Plug Ass'y		3
CN-4	" -011	"		1
CN-5	" -006	"		1
CN-F1	" -005	"		1
CN-12	" -005	"		1
	E43727-002	Tab		30

Analog Digital P.W. Board Parts List

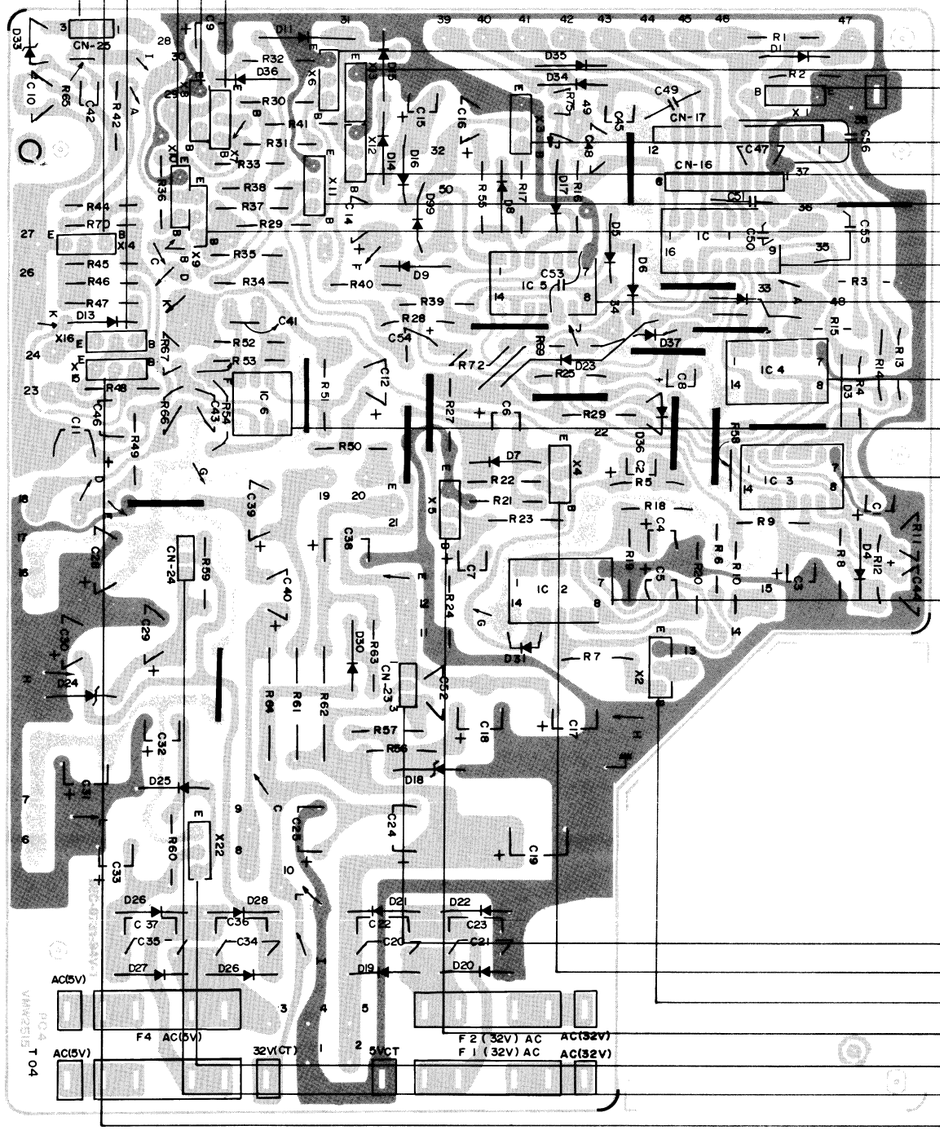
Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	VMW1519-003	P.W. Board	No supply as parts ass'y	1
R501,601	QRD141K-682	C. Resistor	6.8kΩ ¼W	2
R502,602,504,604	" -472	"	4.7kΩ "	4
R503,603	QRD142K-391	"	390Ω "	2
R505,605,511	QRD141K-562	"	5.6kΩ "	3
R506,606,510	" -103	"	10kΩ "	3
R507,607	" -183	"	18kΩ "	2
R508,608,532,632 538,638,535,635	" -393	"	39kΩ "	8
R509,609	" -822	"	8.2kΩ "	2
R512,612	" -272	"	2.7kΩ "	2
R513,613,517,617	" -181	"	180Ω "	4
R514,614,543,643	" -182	"	1.8kΩ "	4
R515,615	" -152	"	1.5kΩ "	2
R516,616	" -222	"	2.2kΩ "	2
R518,618,519,619	" -392	"	3.9kΩ "	4
R520,620	" -221	"	220Ω "	2
R521,621	" -392	"	3.9kΩ "	2
R522,622	" -561	"	560Ω "	2
R523,623	" -332	"	3.3kΩ "	2
R524,624	" -472	"	4.7kΩ "	2
R525~527	" -104	"	100kΩ "	3
R528~531,533,633	" -473	"	47kΩ "	6
R534,634,542,642	" -223	"	22kΩ "	4
R536,636	" -154	"	150kΩ "	2
R537,637	" -473	"	47kΩ "	2
R539,639,553,653	" -333	"	33kΩ "	4
R540,640	" -684	"	680kΩ "	2
R541,641	" -563	"	56kΩ "	2
R544,644	" -331	"	330Ω "	2
R546,646	" -182	"	1.8kΩ "	2
R550,650,551,651	" -334	"	330kΩ "	4
R552,652	" -273	"	27kΩ "	2
VR501,601,502,602 503,603,504,604	QVP8A0B-024	V. Resistor	20kΩ	8
R559,659	QRD142K-221	C. Resistor	220Ω ¼W	2
VR505,605	QVP4A0B-224	V. Resistor	220kΩ	2
VR506,606,507,607 508,608	QVP4A0B-104	"	100kΩ	6
R554,654	QRD141K-683	C. Resistor	68kΩ ¼W	2
R555	QRD146K-331	Unflamable Resistor	330pF " ⚠	1
C501,601	QCS11HJ-561	F.C. Capacitor	560pF 50V	2
C502,602	QFM41HJ-182	Mylar Capacitor	0.0018μF 50V	2
C503,603	QCS11HJ-821	F.C. Capacitor	820pF "	2
C504,604	QFM41HJ-102	Mylar Capacitor	0.001μF "	2
C505,605	QCS11HJ-471	F.C. Capacitor	470pF "	2
C506,606	QFM41HJ-104	Mylar Capacitor	0.1μF "	2
C507,607,508,608	QEW41EA-335N	E. Capacitor	3.3μF 25V	4
C509,609	QFM41HJ-222	Mylar Capacitor	0.0022μF 50V	2
C510,610	QEW41EA-476N	E. Capacitor	47μF 25V	2
C511,611	QFM41HJ-103	Mylar Capacitor	0.01μF 50V	2
C512,612	" -153	"	0.015μF "	2
C513,613	" -183	"	0.018μF "	2
C514,614	" -123	"	0.012μF "	2
C515,615	" -682	"	0.0068μF "	2
C516,616	" -472	"	0.0047μF "	2
C518,618	QFM41HJ-822	"	0.0082μF "	2
C529,629	QCS11HK-151	F.C. Capacitor	150pF "	2
C530,630,520,620	QCS11HJ-201	"	200pF "	4

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
R556,656,557,657	QRD141K-104	C. Resistor	10kΩ ¼W	6
558,658				
L501,601	VQP0001-682	Inductor	6.8mH	2
L502,602,503,603	" -183	"	18mH	4
R561,661	QRD141K-123	C. Resistor	12kΩ ¼W	2
R562,662	" -154	"	150kΩ "	2
IC501,601,502,602	MSM4051	I.C.		6
504,604				
IC503,603	MSM4066	"		2
IC506	UPC4558C	"		1
X502,602	2SC1384S	Si Transistor		2
X501	2SC1685(R.S)	"		1
X504,604	2SC1327(T.U)	"		2
C521~523	QEW41EA-475	E. Capacitor	4.7μF 25V	6
621~623				
C524,624	QFM41HJ-683	Mylar Capacitor	0.068μF 50V	2
C525	QEW41EA-476	E. Capacitor	47μF 25V	1
C526,626	QCS11HJ-821	F.C. Capacitor	820pF 50V	2
C527,627	QFM41HJ-122	Mylar Capacitor	0.0012μF "	2
	FG9010-001	Tab	Bias	1
	QMV5005-005	Plug	5P Bias check	1
R701,702	QRD141K-273	C. Resistor	27kΩ ¼W	2
R703,707,709,712	" -472	"	4.7kΩ "	5
715				
R704,706,710,713	" -123	"	12kΩ "	5
716				
R705	" -102	"	1kΩ "	1
R708,711	QRD142K-821	"	820Ω "	2
R714	QRD141K-332	"	3.3kΩ "	1
R717	" -682	"	6.8kΩ "	1
R718	QRD146K-100	Unflamable Resistor	10Ω "	1
R719	QRD141K-152	C. Resistor	1.5kΩ "	1
R730,731	" -472	"	4.7kΩ "	2
R720,721	" -473	"	47kΩ "	2
R724	QRG019J-102	O.M.F. Resistor	1kΩ 1W	1
R722,726	QRD141K-103	C. Resistor	10kΩ ¼W	2
R727	QRD146K-220	Unflamable Resistor	22Ω "	1
R723	" -330	"	33Ω "	1
R725	QRD141K-223	C. Resistor	22kΩ "	1
C708	QFM41HK-822	Mylar Capacitor	0.0082μF 50V	1
C701,702	QFM41HJ-472	"	0.0047μF "	2
C703	QFP32AJ-223L	Polypropylene Capacitor	0.022μF 10V	1
C709	QEW41CA-106N	E. Capacitor	10μF 16V	1
C704,707	QEW41EA-106N	"	10μF 25V	2
C705	QFS32BK-682	Polystyrene Capacitor	0.0068μF	1
C706	QFM41HK-103	Mylar Capacitor	0.01μF 50V	1
L701	*VQH1009-003	OSC Coil		1
L702	VQP0001-102	Inductor		1
RL701	T31547-002	Relay		1
D702~707	1S2076	Si Diode		6
D709	RD4.3E(C)	Zener Diode		1
D701	RD9.1E(B3)	"		1
X701~705,712	2SA564(R.S)	Si Transistor		6
PC3	MCD-527V2	Photo Coupler		1
PC1,2	MCD-527V1	"		2
X706,708,709,710	2SC1685(R.S)	Si Transistor		5
711				
D724	RD6.2E(B3)	Zener Diode		1

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
X707	2SC1384(R.S)	Si Transistor		1
IC701	*MSM4024	I.C.		1
IC702	*HD7407	〃		1
	VMW4543-001	P.W. Board		1
C528,628	QFS42BK-471	Polystyrene Capacitor	470pF	2
	QMV5004-003	Plug Ass'y		2
CN-5D	QMV5005-011	Plug	11P. Bias	1
R802,807,824	QRD141K-103	C. Resistor	10kΩ ¼W	3
R739	QRD142K-151	〃	150Ω 〃	1
R732,806	QRD141K-223	〃	22kΩ 〃	2
R741	QRG019J-821	O.M.F. Resistor	820Ω 〃	1
R810	〃 -182	〃	1.8kΩ 〃	2
R801,814	〃 -222	〃	2.2kΩ 〃	2
R805	〃 -822	〃	8.2kΩ 〃	1
R808	〃 -562	〃	5.6kΩ 〃	1
R724	QRG019J-681	〃	680Ω 〃	1
R811,812	QRD141K-104	〃	100kΩ 〃	2
R817~819	〃 -273	〃	27kΩ 〃	3
R820	QRD142K-820	〃	82Ω 〃	1
R821	〃 -102	〃	1kΩ 〃	1
R822,823	QRD141K-103	〃	10kΩ 〃	2
VR509,609	QVP6A0B-054	V. Resistor	50kΩ	2
VR510,610	QVP6A0B-014	〃	10kΩ	2
VR801	QVP8A0B-015	〃	100kΩ	1
VR802~804	〃 -024	〃	20kΩ	3
C806	QCS11HK-101	F.C. Capacitor	100pF 50V	1
C801	QEB41HM-474M	E. Capacitor	0.47μF 〃	1
C802	QFM41HJ-473	Mylar Capacitor	0.047μF 〃	1
C803	QEW41EA-475N	E. Capacitor	4.7μF 25V	1
C804,805	QFM41HK-474	Mylar Capacitor	4.7μF 50V	2
D801,802	1S2075K-23	Si Diode		2
IC801~803	UPC4558C	I.C.		3
IC804	MSM4053	〃		1
	VKL4595-001	Bracket		1
	VMH4001-002	Heat Sink		2
	DPSP3006ZS	Screw		4
	QRD141K-0R0	C. Resistor	Jump, 0Ω	58
	E43727-002	Tab		48

Mechanical Control P.W. Board Parts

E. Voltmeter	5	16	5.6	0	0.12	0.71	0	21	0	0	6.5	0.05	0	0.05	0.7	0.05	15	0.04	0	0.04	0.73	0.74	32	0.07	0	-0.01	0.63
C. Tester	5	16	5.6	0	0.12	0.7	0	21	0	0	6.4	0.04	0	0.05	0.7	0.05	15	0.02	0	0.02	0.72	0	32	0.06	0	0	0.61
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
	X20			X14			X16			X10			X8			X7			X6			X13			X1		

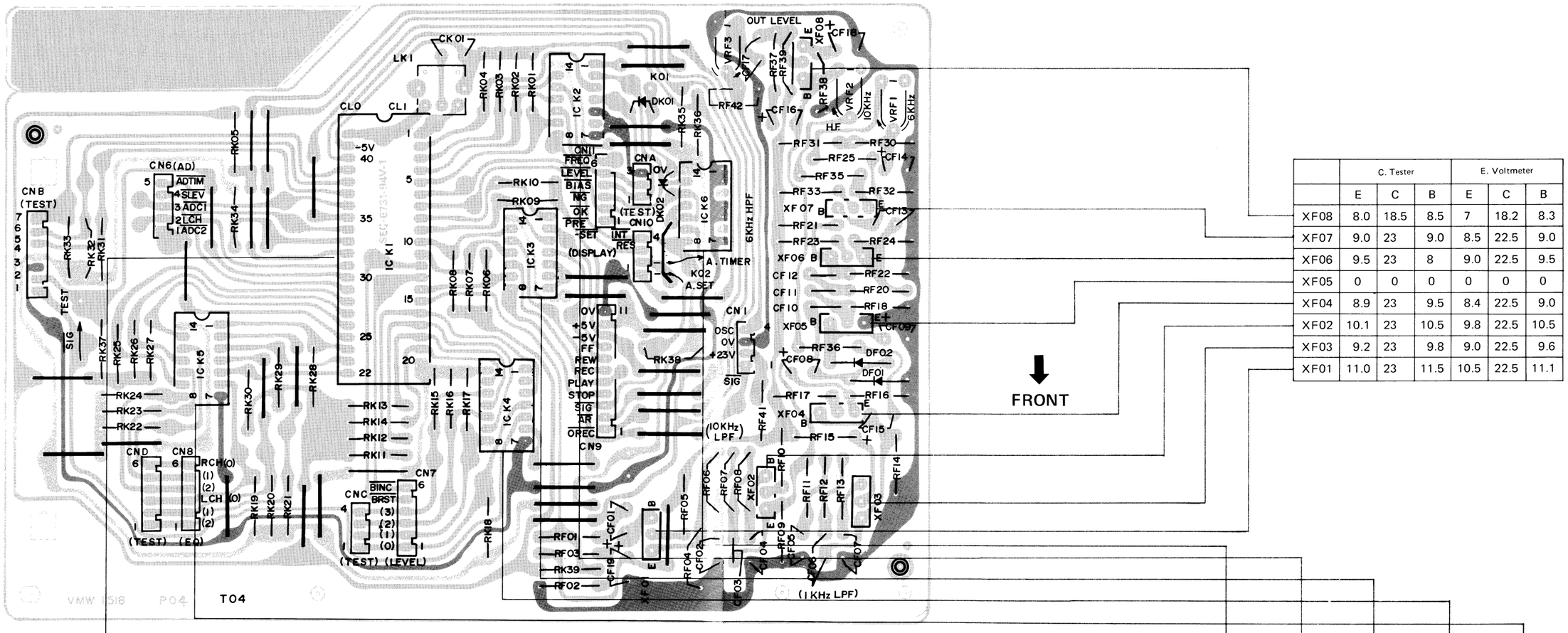


	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X3	0	0.06	0.75	0	0.07	1.75
X12	0	0.08	0.72	0	0.07	0.74
X11	0	0.2	0.75	0	0.2	0.75
X9	6.4	15	7	6.5	15	7

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC1	C. Tester	4.5	4.5	4.5	3.1	4.5	4.5	4.5	0	4.8	0.12	0.12	4.6	0.12	0.12	0.12	4.7
	E. Voltmeter	4.7	4.7	4.7	3.1	4.7	4.7	4.7	-0.01	4.9	0.12	0.12	4.7	0.12	0.12	0.12	4.8
IC5	C. Tester	-0.64	0.5	4.4	3.3	0.33	3.2	0	3.3	0.12	0.02	3.4	0.12	0.02	4.7		
	E. Voltmeter	-0.65	0.5	4.8	3.4	0.34	3.2	0	3.4	0.12	0.05	3.4	0.12	0.05	4.9		
IC4	C. Tester	0.12	0.12	3.4	0.12	0.12	3.4	0	3.3	3.4	0.04	0.04	4.6	4.6	4.7		
	E. Voltmeter	0.13	0.13	3.4	0.12	0.12	3.4	0	3.4	3.4	0.05	0.05	4.8	4.8	4.8		
IC6	C. Tester	0.04	0	0	-5	0.025	0	0.04	4.8								
	E. Voltmeter	0.04	0.04	0	-5	0.04	0	0.04	4.8								
IC3	C. Tester	3.3	3.5	0.12	0.74	0.74	3.5	0	0.01	3.3	3.8	0.02	3.3	3.3	4.7		
	E. Voltmeter	3.4	3.8	0.12	0.8	0.8	3.8	0	0.04	3.4	3.9	0.05	3.4	3.4	4.8		
IC2	C. Tester	1.45	1.45	0.01	0.01	3.5	3.5	0	3.5	0.32	0.32	0.13	1.47	1.47	4.8		
	E. Voltmeter	1.5	1.5	0.04	0.04	3.6	3.8	0	3.7	0.34	0.34	0.135	1.5	1.5	4.8		

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X19	23.2	32.5	24	23.5	32	24
X4	19.5	0	23.5	19.5	0.08	23.5
X2	0	32	0.13	0	32	0.13
X5	0	23	0	0	23.5	-0.02
X22	-4.9	-8.7	-5.6	-5	-8.8	-5.6
X21	4.7	5.5	7.8	4.8	7.8	5.6
X15	21	21	20	21	21	20

Computer P.W. Board Parts



	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
XF08	8.0	18.5	8.5	7	18.2	8.3
XF07	9.0	23	9.0	8.5	22.5	9.0
XF06	9.5	23	8	9.0	22.5	9.5
XF05	0	0	0	0	0	0
XF04	8.9	23	9.5	8.4	22.5	9.0
XF02	10.1	23	10.5	9.8	22.5	10.5
XF03	9.2	23	9.8	9.0	22.5	9.6
XF01	11.0	23	11.5	10.5	22.5	11.1

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
ICK1	C. Tester	2.6	4.2	4.2	4.2	4.2	3.7	4.8	4.3	4.3	4.3	4.3	-1.0	-0.7	4.3	4.3	4.4	4.4	4.4	-0.7	5.1	5.1
	E. Voltmeter	2.6	4.2	4.2	4.2	4.2	3.6	5.0	4.2	4.2	4.2	4.2	-1.0	-0.7	4.2	4.2	4.4	4.4	4.4	-0.7	5.2	5.2
		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	C. Tester	4.4	4.4	-0.7	5.1	4.4	4.4	-0.7	5.1	4.4	5.1	4.4	PLAY 0.1 REC 4.7	4.2	4.9	4.2	3.5	3.5	3.5	5.0	-5	2.6
	E. Voltmeter	4.4	4.4	-0.7	5.0	4.4	4.4	-0.7	5.0	4.3	5.0	4.2	PLAY 0.2 REC 4.8	4.2	4.9	4.2	5.0	5.0	5.0	5.1	-5.0	2.6

	ICK6		ICK2		ICK3		ICK4		ICK5	
	C. Tester	E. Voltmeter	C. Tester	E. Voltmeter	C. Tester	E. Voltmeter	C. Tester	E. Voltmeter	C. Tester	E. Voltmeter
1	0	0	4.3	4.3	4.2	4.2	1.7	1.7	-0.6	-0.7
2	0	0	3.2	3.2	4.6	4.7	0.2	0.2	0.2	0.2
3	4.0	4.2	4.2	4.2	4.3	4.3	4.4	4.4	4.4	4.4
4	0	0	3.2	3.3	4.6	4.7	5.1	5.1	5.1	5.1
5	0	0	0	0	0	0	4.4	4.4	4.4	4.4
6	4.0	4.2	0	0	0	0	5.0	5.0	5.1	5.1
7	0	0	0	0	0	0	0	0	0	0
8	0.2	0.2	3.2	3.2	4.6	4.7	5.0	5.0	0.1	0.1
9	4.9	4.9	4.3	4.2	4.3	4.3	4.3	4.3	-0.6	-0.7
10	3.2	3.2	3.2	3.3	4.5	4.7	5.0	5.1	5.1	5.1
11	0.2	0.2	4.2	4.2	4.3	4.3	4.4	4.4	4.4	4.4
12	3.2	3.2	3.2	3.3	4.6	4.7	0.1	0.1	5.1	5.1
13	3.2	3.2	4.2	4.2	4.3	4.3	-0.6	-0.7	4.4	4.4
14	5.1	5.2	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1

Mechanical Control P.W. Board Parts List

⚠ parts are safety assurance parts.
When replacing those parts, make sure to use the specified one.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	VMW2515-002	P.W. Board	No supply as parts ass'y	1
R1	QRD141K-223	C. Resistor	23kΩ ¼W	1
R2	" -473	"	47kΩ "	1
R3,11,19	" -562	"	5.6kΩ "	3
R4,9,12,33,55,77	" -102	"	1kΩ "	6
R5,39,44,69	" -472	"	4.7kΩ "	4
R6,13,14	" -271	"	270Ω "	3
R7,50	" -101	"	100Ω "	2
R8	" -222	"	2.2kΩ "	1
R10	QRG019J-681	O.M.F. Resistor	680Ω 1W	1
R15,17	QRD141K-331	C. Resistor	330Ω ¼W	2
R16,74	" -391	"	390Ω "	2
R18	" -683	"	68kΩ "	1
R20,31,34	" -471	"	470Ω "	3
R21	" -682	"	6.8kΩ "	1
R22,25	" -153	"	15kΩ "	2
R23,27,40,54,67	" -103	"	10kΩ "	5
R24	" -220	"	22Ω "	1
R26,41,45,47	" -222	"	2.2kΩ "	4
R28,29,42	" -472	"	4.7kΩ "	3
R30	QRD121K-222	"	2.2kΩ "	1
R32	QRD141K-153	"	15kΩ "	1
R36	" -152	"	1.5kΩ "	1
R37	QRG019J-331	O.M.F. Resistor	330Ω 1W	1
R38	" -102	"	1kΩ "	1
R46	QRD141K-562	C. Resistor	5.6kΩ ¼W	1
R48	" -333	"	33kΩ "	1
R49	QRD146K-101	"	100Ω " ⚠	1
R51	QRD141K-104	"	100kΩ "	1
R52	" -152	"	1.5kΩ "	1
R53	" -224	"	220kΩ "	1
R56	QRD146K-102	"	1kΩ " ⚠	1
R57	" -3R3	"	3.3Ω " ⚠	1
R58	QRD143K-561	"	560Ω "	1
R59,60	QRD146K-151	"	150Ω " ⚠	2
R61	QRG029J-151	M.F. Resistor	150Ω 2W ⚠	1
R62	" -391	"	390Ω " ⚠	1
R63	QRG019J-220	"	22Ω 1W ⚠	1
R64	QRG029J-150	"	15Ω 2W ⚠	1
R65	QRD143K-102	C. Resistor	1kΩ ¼W	1
R66	" -105	"	1MΩ "	1
R75	QRD142K-331	"	330Ω "	1
R68	QRD143K-272	"	2.7kΩ "	1
	QWY123-022	Bus Wire		16
R76	QRG016J-220	O.M.F. Resistor	22Ω 1W ⚠	1
	V44611-001	F. Bus Wire		1
R70	QRD141K-563	C. Resistor	56kΩ ¼W	1
R71	QRD143K-102	"	1kΩ "	1
C1,3	QEW40JA-477N	E. Capacitor	470μF 6.3V	2
C2	QEB41EM-476N	"	47μF 25V	1
C4	QEW40JA-108N	"	1000μF 6.3V	1
C5,9	QEW41CA-336N	"	33μF 16V	2
C6	QEW41EA-107N	"	100μF 25V	1
C7,8	" -106N	"	10μF "	2
C10,11	" -475N	"	4.7μF "	2
C12	QEB41HM-105N	E. Capacitor (Low Leak)	1μF 50V	1
C54	" -106N	"	10μF "	1
C14,15,16	QEW41AA-477N	E. Capacitor	470μF 10V	3

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
C17,18	QEW41EA-477N	E. Capacitor	470μF 25V	2
C19	QET41HR-228N	"	2200μF 50V	1
C20,21,22,23	QCF12HP-103	F.C. Capacitor	0.01μF 50V	4
C24,25	QEW41EA-108N	E. Capacitor	100μF 25V	2
C53,911	QCS11HK-101	F.C. Capacitor	100pF 50V	2
C28	QEW41AA-108N	E. Capacitor	1000μF 10V	1
C29,30,32,33	QEW41CA-477N	"	470μF 16V	4
C31	QEW41AA-108N	"	1000μF 10V	1
C34,35,36,37	QCF12HP-103	F.C. Capacitor	0.01μF 50V	4
C38,39	QEW41VA-477N	E. Capacitor	470μF 35V	2
C40	QEW41EA-227N	"	220μF 25V	1
C41	QFM41HJ-102	Mylar Capacitor	0.001μF 50V	1
C42	QEW41CA-476	E. Capacitor	47μF 16V	1
C43	QFM41HJ-562	Mylar Capacitor	0.0056μF 50V	1
C56	QCF11HP-104	F.C. Capacitor	0.1μF "	1
C44	QEW41AA-106N	E. Capacitor	10μF 10V	1
C52	QCS11HK-470	F.C. Capacitor	47pF 50V	1
C45,47~51,53,55	QCF11HP-103	"	0.01μF "	8
X1,5,6,11,12,14,16	2SC458(C,D)	Si. Transistor		7
X2,3,7,9,13	2SC1162(B,C)	"		5
X4	2SA844(C,D)	"		1
X8,10	2SD468(B,C)	"		2
X15	2SA844(C,D)	"		1
X22	2SA715(B,C)	"		1
IC1	M54410P	I.C.		1
IC2,3,4,5	HD7400	"		4
IC6	UPC4558C	"		1
D1,5,6,8~12,14,15 17,23,34,35	1N34A	Ge. Diode		14
D3,4,13,31,99	1S2076	Si. Diode		5
D7	RD4.3E(C)	Zener Diode		1
D16	RD2.7E(B)	"		1
D18	RD24E(B3)	"		1
D19~22,26~30	10E1-B	Si. Diode		9
D24,25,33	RD5.6E(B)	Zener Diode		3
D36,37	1S2076	Si. Diode		2
CN-16	QMV5005-008	Plug Ass'y		1
CN-17	" -012	"		1
CN-23,CN-24,CN-25	" -003	"		3
	E43727-002	Tab		44
	E40130-001	Tab		6
	TAZ000331-02	Fuse Holder		8
	QMF51A2-1R6BS	Fuse	F1,F2, KD-A8B ⚠	2
	" -1R6	"	" KD-A8A/E ⚠	2
	QMF51A2-R50BS	"	F3 KD-A8B ⚠	1
	" -R50	"	" KD-A8A/E ⚠	1
	" -R50BS	"	F4 KD-A8B ⚠	1
	" -R50	"	" KD-A8A/E ⚠	1
	TAZ000509-06	Fuse Seal	F1, F2 ⚠	2
	" -09	"	F3 ⚠	1
	"	"	F4 ⚠	1

Computor P.W. Board Parts List

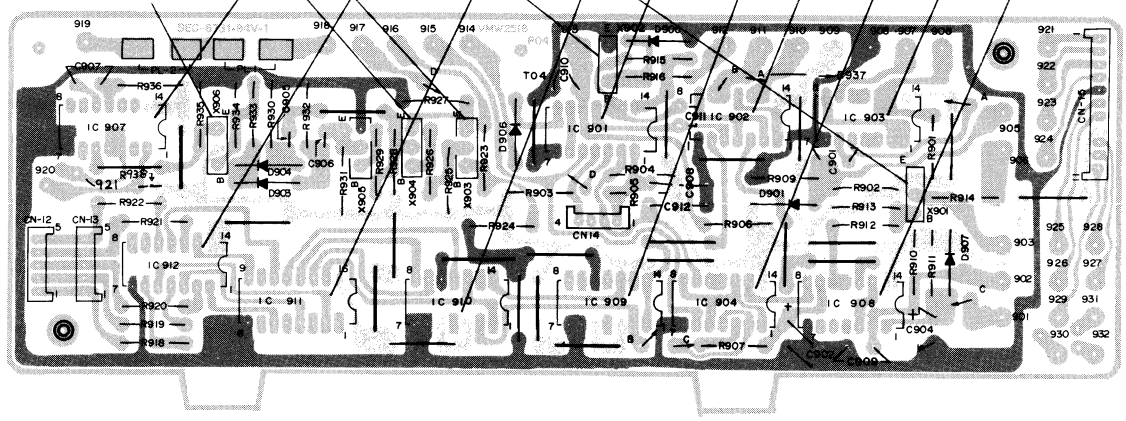
Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	VMW1518-002	P.W. Board		1
RF01,F35	QRD141K-223	C. Resistor	22kΩ ¼W	2
RF02,F03,F31,F36	〃 -683	〃	68kΩ 〃	4
RF04,F09,F14,F16 F24,F32,F38	〃 -562	〃	5.6kΩ 〃	7
RF05,F10,F15,F17 F23,F33	〃 -101	〃	100Ω 〃	6
RF06,F07,F08,F11 F12,F13,F25	〃 -103	〃	10kΩ 〃	7
RF18	〃 -123	〃	12kΩ 〃	1
RF20	〃 -272	〃	2.7kΩ 〃	1
RF21,F22	〃 -684	〃	680kΩ 〃	2
RF30	〃 -473	〃	47kΩ 〃	1
RF39	〃 -332	〃	3.3kΩ 〃	1
RF41	QRD146K-101	Unflamable Resistor	100Ω 〃 ⚠	1
RF42	QRD143K-102	C. Resistor	1kΩ 〃	1
VRF1,F2,F3	QVP8A0B-024	V. Resistor	20KB	3
CF01	QEB41HM-104M	E. Capacitor	0.1μF 50V	1
CF02	QFM41HJ-332	Mylar Capacitor	0.0033μF 〃	1
CF03	〃 -183	〃	0.018μF 〃	1
CF04	QCS11HJ-121	F.C. Capacitor	120pF 〃	1
CF05	QFM41HJ-333	Mylar Capacitor	0.033μF 〃	1
CF06	〃 -154	〃	0.15μF 〃	1
CF07	〃 -122	〃	0.0012μF 〃	1
CF08	QEW41EA-105N	E. Capacitor	1μF 25V	1
CF09	QEB41HM-104M	E. Capacitor (Low Leak)	0.1μF 50V	1
CF10~F12	QFM41HJ-102	Mylar Capacitor	0.001μF 〃	3
CF13	QFM41HJ-222	〃	0.0022μF 〃	1
CF14	QEW41CA-106N	E. Capacitor	10μF 16V	1
CF15	QEB41HM-104M	〃	0.1μF 50V	1
CF16	QEW41EA-335N	〃	3.3μF 25V	1
CF17	QFM41HJ-473	〃	0.047μF 50V	1
CF18	QEW41EA-105N	〃	1μF 25V	1
CF19	〃 -107N	〃	100μF 〃	1
XF01~F08	2SC1685(R,S)	Si. Transistor		8
DF01,F02	1N34A	Ge. Diode		2
DK01,K02	1S2076	Si. Diode		2
CN1	QMV5005-004	Plug	4P	1
RK01~K14 K25~30,37,39	QRD141K-272	C. Resistor	2.7kΩ ¼W	22
RK15~K24	〃 -472	〃	4.7kΩ 〃	10
RK31~33	〃 -104	〃	100kΩ 〃	3
RK34~36	〃 -103	〃	10kΩ 〃	3
RK38	〃 -102	〃	1kΩ 〃	1
CK01	QCF11HP-103	F.C. Capacitor	0.01μF 50V	1
LK1	VQT1A11-102	IFT		1
	V44611-005	Formed Bus Wire		1
	QRD141K-0R0	C. Resistor	Jump	34
ICK1	*UPD546C-45	I.C.		1
ICK2~K5	*HD7407	〃		4
ICK6	HD7400	〃		1
CNA	QMV5005-003	Plug	3P	1
CN10,C	〃 -004	〃	4P	2
CN6	〃 -005	〃	5P	1
CN7,8,11,D	〃 -006	〃	6P	4
CNB	〃 -007	〃	7P	1
CN9	〃 -011	〃	11P	1
	VMZ0005-001	Tab	SIG TEST	2
	E43727-002	〃		1

IC Control P.W. Board Parts

	C. Tester			E. Voltmeter		
	E	C	B	E	C	B
X906	0.6	4.8	0	0.6	4.8	0
X904	0.2	4.6	0.3	0.3	4.7	0.3
X903	0.3	0.3	0.9	0.3	0.3	1.0
X902	0	2.4	0.1	0	2.5	0.2
X901	4.8	-5	4.1	4.9	-5	4.5

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC907	C. Tester	3.6	0	0	0	0.6	0.1	0	0	0.9	4.8	0.9	0	0	4.8		
	E. Voltmeter	3.7	0	0	0	0.6	0.1	0	0	0.9	4.8	1.0	0	0	4.8		
IC912	C. Tester	3.6	3.3	3.6	3.3	3.6	3.2	0	0	1.6	3.3	3.6	3.3	3.6	4.8		
	E. Voltmeter	3.7	3.5	3.7	3.5	3.7	3.5	0	0.5	1.7	3.5	3.7	3.5	3.7	4.9		
IC911	C. Tester	0.1	3.6	3.6	3.6	3.6	3.6	3.6	0	3.6	3.6	3.6	0.1	0.1	0.1	0.1	4.8
	E. Voltmeter	0.1	3.7	3.9	3.7	3.9	3.7	3.9	0	3.7	3.9	3.7	0.1	0.2	0.2	0.2	4.8
IC910	C. Tester	0.1	4.9	4.8	0	4.8	0	0	0.1	0.1	0	0.1	0.1	0	0.1		
	E. Voltmeter	0.2	5.0	4.8	0	4.8	0	0	0.1	0.1	0	0.2	0.2	0	0.1		
IC901	C. Tester	4.6	4.6	4.9	4.6	4.5	3.6	0	4.2	3.6	4.7	1.9	2.4	2.4	4.8		
	E. Voltmeter	4.8	4.8	5.1	4.8	4.7	3.6	0	4.6	3.6	4.8	2.0	2.5	2.5	4.8		
IC909	C. Tester	3.6	5	4.8	0	4.8	0	0	0.1	0.1	0	0.1	0.1	0	3.6		
	E. Voltmeter	3.6	5.0	4.8	0	4.8	0	0	0.1	0.1	0.1	0.1	0.1	0	3.6		
IC902	C. Tester	0.1	0.1	3.6	0.1	1.9	3.6	0	0.1	4.9	4.9	0.1	4.5	4.5	4.8		
	E. Voltmeter	0.1	0.1	3.7	0.1	1.9	3.6	0	0.1	5.0	5.0	0.1	4.7	4.7	4.8		
IC904	C. Tester	0.1	0.1	3.8	0.1	0.1	4.8	0	3.6	4.6	0.1	0.1	3.6	3.6	4.8		
	E. Voltmeter	0.1	0.1	3.7	0.1	0.1	4.7	0	0.1	4.8	3.7	3.7	0.1	3.7	4.8		
IC903	C. Tester	3.6	3.6	0.1	0.1	4.9	3.6	0	3.6	0.2	0.2	0.2	4.6	4.6	4.8		
	E. Voltmeter	3.7	3.7	0.1	0.1	5.0	4.8	0	3.7	0.2	0.1	0.1	4.8	4.8	4.8		
IC908	C. Tester	4.4	4.6	4.6	1.6	1.6	3.6	0	3.6	3.6	3.6	3.6	3.6	3.6	4.8		
	E. Voltmeter	4.4	4.8	3.6	1.6	1.6	3.8	0	3.7	3.7	4.1	4.1	3.6	3.6	4.8		

Upper side

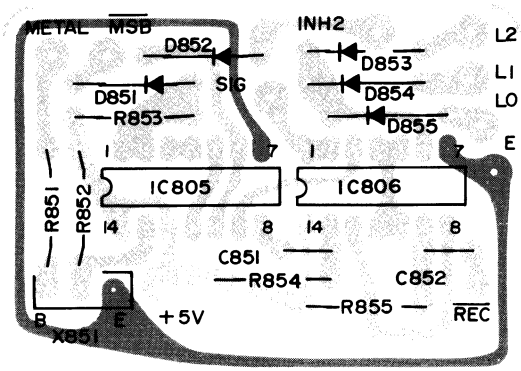


IC Control P.W. Board Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	VMW2516-002	P.W. Board	No supply as parts ass'y	1
R901~906,910 915,937	QRD142K-562	C. Resistor	5.6kΩ ¼W	9
R907	" -221	"	220Ω "	1
R911,913,926,929 934	" -473	"	47kΩ "	5
R912	" -683	"	68kΩ "	1
R914,923	" -103	"	10kΩ "	2
R916	" -472	"	4.7kΩ "	1
R918~922,935	" -331	"	330Ω "	6
R925	" -222	"	2.2kΩ "	1
R927,933	" -101	"	100Ω "	2
R928,931	" -182	"	1.8kΩ "	2
R930,932	" -223	"	22kΩ "	2
R936	" -332	"	3.3kΩ "	1
	E40130-001	Tab		4
	V44611-005	Bus Wire		23
C901,902	QEB41HM-105M	E. Capacitor (Low Leak)	1μF 50V	2
	QCS11HK-101	F.C. Capacitor	100pF "	1
C904	QEW40JA-477N	E. Capacitor	470μF 6.3V	1
C905,906	QFM41HK-102	Mylar Capacitor	0.001μF 50V	2
C907	" -683	"	0.068μF "	1
C908,909	" -183	"	0.018μF "	2
C910	QCF11HP-103	F.C. Capacitor	0.01μF "	1
X901	2SA844(C,D)	Si. Transistor		1
X902~906	2SC458(C,D)	"		5
C912	QCF11HP-103	F.C. Capacitor	0.01μF 50V	1
IC901,908	HD7408	I.C.		2
IC902~904	HD7400	"		3
IC907	TD34121AP	"		1
IC909,910	HD7490A	"		2
IC911	HD7442	"		1
IC912	HD7407	"		1
D901~906	1S2076	Si. Diode		6
	E43727-002	Tab		33
CN-12,CN-13	QMV5005-005	Plug Ass'y		2
CN-14	" -004	"		1
CN-5	" -011	"		1

Other P.W. Board Parts

BY–Pass P. W. Board Parts



X851	E	C	B
C. Tester	0	4.9	-3.9
E. Voltmeter	0	5.1	-5

TOI

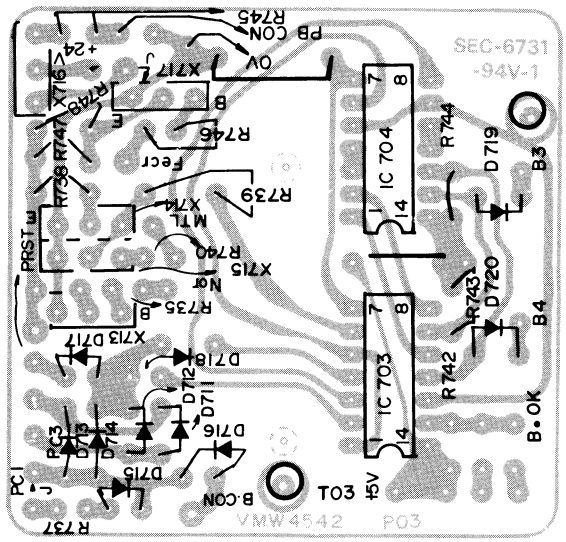
BY–Pass P. W. Board Parts List

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC805	C. Tester	4.9	4.9	0.1	0.1	0.1	4.2	0	3.9	0.1	4.2	0.1	5.1	4.9	5.1
	E. Voltmeter	5.0	5.0	0.1	0.1	0.1	4.2	0	4.1	0.1	4.3	0.1	5.1	5.1	4.8
IC806	C. Tester	4.9	4.9	0.1	0.1	0.1	4.7	0	3.9	4.9	0.1	0.1	3.9	4.9	5.0
	E. Voltmeter	4.9	4.9	0.1	0.1	0.1	4.9	0	4.0	0.1	0.1	0.1	0.1	4.0	5.1

Bias Control

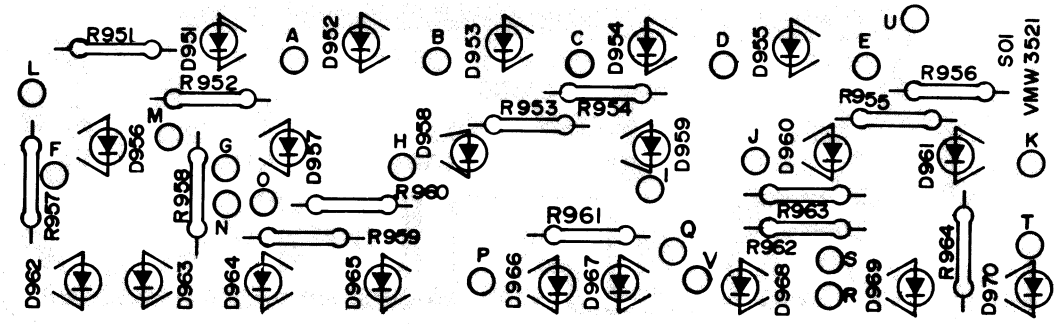
PIN Jacks

Slide Switch

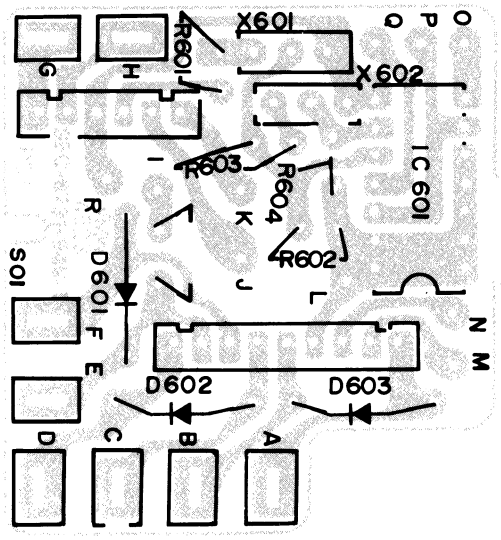


Transistor

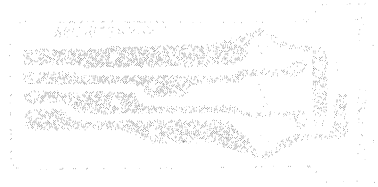
L.E.D.



Connector

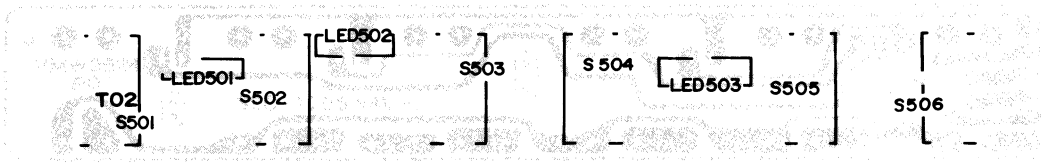


Switch Holder



Hall Element

Control Switches (Parts Ass'y Side)



Control Switches (Pattern side)

Othe P.W. Board Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
(Bias control)				
	VMW4542-003	P.W. Board		1
R735,739,740	QRD143K-153	C. Resistor	15kΩ ¼W	6
746~748				
R738,745	" -103	"	10kΩ "	2
R736,737	" -332	"	3.3kΩ "	1
R742,743,744	" -682	"	6.8kΩ "	3
R747,748	" -392	"	3.9kΩ "	2
X713,714,715,716	2SC1685(R,S)	Si. Transistor		4
D711~715	1S2076	Si. Diode		10
717~720,726				
D716	OA91	Ge. Diode		1
IC703	TD3404AP	I.C.	or HD7404	1
IC704	HD7408	"		1
(By-pass)				
	VMW4539-002	P.W. Board		1
R851,854,855	QRD142K-103	C. Resistor	10kΩ ¼W	3
R852,853	" -562	"	5.6kΩ "	2
C851,852	QFM41HK-333	Mylar Capacitor	0.033μF 50V	2
D851~856	1S2076	Si. Diode		6
IC805,806	HD7400	I.C.		2
X851	2SC1685(RS)	Si. Transistor		1
	VKL4569-001	Suspender		1
(L.E.D.)				
	VMW3521-002	P.W. Board		1
R951~955	QRD142K-271	C. Resistor	270Ω ¼W	8
961~963				
R956~960,964	" -471	"	470Ω "	6
	V44691-001	Wire Clamp		5
D951~955	SLP-132B	L.E.D.		11
961~965,970				
D956~960	SLP-232BV	"		9
966~969				
(Control Switch)				
	VMW3524-001	P.W. Board		1
	QSP0022-002	Touch Switch		6
LED502	TLR102	L.E.D.		1
LED501,503	TLG102(S)	"		2
	VKZ4101-001	Spacer		3
(Connector)				
	VMW4523-001	P.W. Board		1
	10E1-B	Si. Diode		3
	QMV5005-006	Connector		1
	QMV5005-009	"		1
	FG9010-001	Tab		8
(Transistor with Radiation Plate)				
	VMW4514-001	P.W. Board		3
	VKL4264-002	Radiation Plate		3
X19,20	2SD476(C,D)	Si. Transistor		2
X21	2SC1162WT(B,C)	"		3
	LPSP3008ZS	Screw		3
	LPSP2606Z	"		3
	SBSB3006Z	"	for Radiation Plate	3
(PIN Jacks)				
	TAA345532-01	Circuit Board		1
	TAJ331301-03	Pin Jack Ass'y		1

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
(Slide Switch)				
	VMW4522-001	P.W. Board (L)		1
	QSP0029-001	Slide Switch		2
	QMV5004-004	Connector		1
(Hall Element)				
	VMW4528-002	P.W. Board		1
	VHE-6100	Hall Element		1
	QRD121K-152	C. Resistor	1.5kΩ ¼W	1
	QEW41EA-107	E. Capacitor	100μF 25V	1
	QMV5004-004	Connector		1
(Slide Switch)				
	VMW4534-001	P.W. Board		1
	QSP0029-001	Slide Switch		1
	QMV5004-003	Connector		1

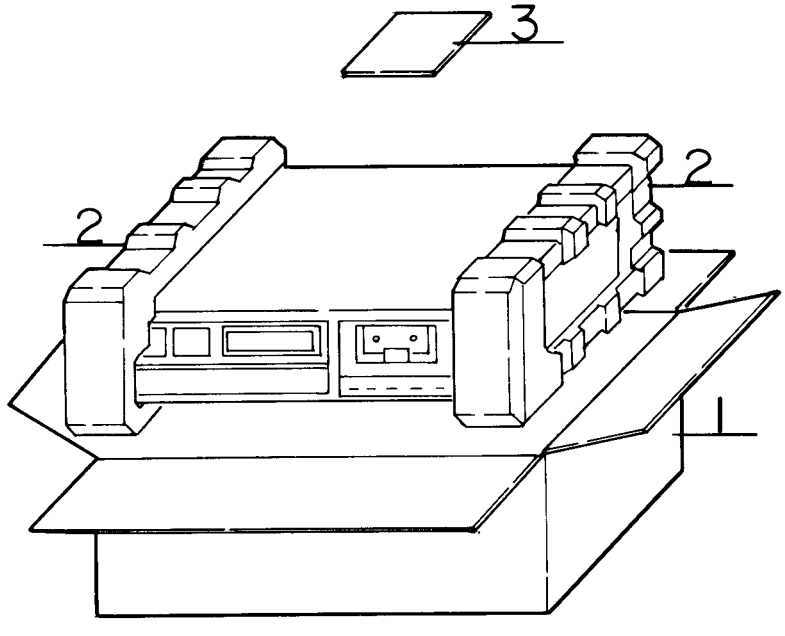
Socket Ass'y Parts List

Ref. No.	Parts No.	Parts Name	Remarks
No. 1	QMV7003-004	Socket Ass'y	4P CPU → Amp
No. 2	QMV7003-003	"	4P BIAS/REC, AMP → A/D
No. 3	QMV7003-004	"	4P BIAS SELECT Amp → A/D
No. 4	"	"	" Amp → IC Cont
No. 5	QMV7003-011	"	11P A/D → Amp
No. 6	" -005	"	5P CPU → A/D
No. 7	" -006	"	6P CPU → A/D
No. 8	" -006	"	6P CPU → A/D
No. 9	" -011	"	11P CPU → Mecha Cont
No. 10	" -004	"	4P CPU → IC Cont
No. 11	" -006	"	6P CPU → LED
No. 12	" -005	"	5P IC Cont → Amp
No. 13	" -005	"	5P LED PWB → IC Cont
No. 14	" -004	"	4P IC Cont → Timer SW
No. 15	" -011	"	11P IC Cont → LED PWB
No. 16	" -008	"	8P Remote DIN Connector
No. 17	" -012	"	12P Mecha Cont → Cont SW
No. 18	" -004	"	4P Tape & Rec Proof SW
No. 19	" -004	"	4P H.E → Mecha Cont
No. 20	" -009	"	9P Mecha Sol → Mecha Cont
No. 21	" -003	"	3P Mecha Tape Nor/CrO2 Select
No. 22	" -006	"	6P Mecha
No. 23	" -003	"	3P for X21
No. 24	" -003	"	3P for X22
No. 25	" -003	"	3P for X19
CN-F1	" -006	"	6P for R/P Head
CN-F2	" -003	"	3P for Erase Head

Label List

Parts No.	Parts Name	Remarks	Q'ty
VND4016-001	Metal Sticker	for Front Plate	1
VND4006-004	Caution Label		1
VNC0404-005	Caution Sheet		1
VND4014-003	Caution Label	for Door	1
VND4001-005	Caution Label	for Rear Bracket	1
VNC5005-001	LA Label		1

Packing



Packing Material Parts List

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1,2	VPA3072-00B	Packing Case Ass'y	KD-A8 A/B/E/J/U	1 set
	" -00C	"	KD-A8 C	
1	VPA3072-004	Case	KD-A8 A/B/E/J/U	1
	" -005	"	KD-A8 C	1
2	VPH1171-001	Cushion	Left	1
2	VPH1172-001	"	Right	1
	QPGA065-07005	Envelope	for deck	1
	AP4056A-036	"	for Power cord Pin cord	2
3	QPGB024-03404	"	for Instruction Book	1
	TKS000501-01	Sheet	for deck	1

Accessories

Parts No.	Parts Name	Remarks	Q'ty
VMP0002-00A	Pin Cord		2
VYA4001-00A	Head Cleaning Stick		1
VNN0033-301	Instruction Book		1
TLJ000476-02	ANRS Seal		1
TLJ000477-02	Super ANRS Seal		1
BT20029	Warranty Card	KD-A8 A	1
VND4013-001	Warning Label	KD-A8 A/B/E	1
T46328-003	Caution Label	KD-A8 A/B	1
BT20013B	Guarantee Certificate	KD-A8 B	1
TJL000443-01	Seal	KD-A8 B	1
	BEAB Label	KD-A8 B	1
QZL1002-003BS	Warning Label	KD-A8 B	1
VNC5004-001	Mark Sticker	KD-A8 B/E	1
BT20025C	Warranty Card	KD-A8 C	1
T44362-001	CSA Marker	KD-A8 C	1
TLT000505-01	UL/CSA Caution Label	KD-A8 C/J	2
T46328-04	Caution Label	KD-A8E	1
BT20032	Warranty Card	KD-A8 J/U for PX	1
BT20024B	Special Reply Card	KD-A8 J/U for PX	1
BT20023	Service Procedure	KD-A8 J/U for PX	1
E7795-1	EP Mark	KD-A8 U for PX	1
V04062-001	Siemens Plug	KD-A8 U	1
T46328-001	Caution Label	KD-A8 U	1

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